THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 11 APRIL, 1929 No. 1

High Spots in Problem of Burning Pulverized Coal

An Engineering Study of Coal Pulverizers and Burners, with Observations on the Volume of Furnace Required

By WALTER N. POLAKOV
Consulting Engineer, New York

PROGRESS in the attainment of high capacity and efficiency in firing furnaces was a result of careful consideration of the basic principles of combustion, and came about despite the blunders of practical experience or empiricism.

The old invention of grates revolutionized steam engineering by permitting the passage of air through the fuel bed. During more than two centuries practical men have changed the shape of the gates, direction of the draft, method of feeding coal, shaking, propelling, dumping. Yet throughout this long history they remained chained to the tradition that coal must be burned as it comes from the mine—in lumps.

Meanwhile, the six-dimensional geometry made possible the study of the kinetics of gases, and the advent of the automobile brought to the fore new theoretical studies of carbureting, surface combustion, propagation of combustion and other related theories. Purely abstract calculations pushed the inventive mind on a new track. If a cubic inch of coal is powdered so that from 60 to 75 per cent of the particles will pass through a 300-mesh screen, there will be some 26,000,000 to 28,000,000 such particles and the cumulative surface will be over 500 times greater than in an inch cube of coal. Combustion is a process of rapid oxidation or chemical combination of combustible matter with the oxygen (of the air) accompanied by liberation of intense heat. Just in the same way as granulated sugar melts in your coffee faster than lump sugar does, so powdered coal burns much faster than lump coal; in fact, coal dust under certain conditions may explode.

Consider now the stages of combustion of lump coal on the grate or on a mechanical stoker. Green coal fed into a hot furnace gives off its volatile matter or gas. This gas ignites (unless cooled off by contact with relatively cool boiler parts) and burns, liberating, depending on the chemical composition of the gas, an average of 23,000 B.t.u. per lb. (from zero to 64,000 B.t.u. per lb. of constituent). Then, so-called fixed carbon and true carbon combines with the oxygen of the air if there is enough oxygen present in the furnace. As these gases ignite slowly and travel as they burn, the oxygen content grows poorer and poorer along the path of the gas travel, the combustion in consequence becomes more and more difficult and less complete. Two parts of oxygen combined with each part of carbon (CO_2) liberate 14,650 B.t.u. (heat units) per lb., but if there is only one part of oxygen left for each part of carbon (CO), in that case only 4,430 B.t.u. per lb. is produced. To insure complete combustion, an excess of air is always admitted to the furnace, with the inevitable result that while all heat is generated, a great deal of it goes to warm up the air and not the water and steam in the boiler. Gradually the lumps of coke on the grate become mixed with more and more ashes; some of the ash melts into clinkers and cuts off the contact of coke with the air, and in the end this part of the fuel is also lost through the ash pit.

Now let us consider briefly the combustion of fuel oil as it is finally sprayed into the furnace. Each finally atomized drop of oil readily ignites in the hot furnace and, unless cooled off by contact with cool air or by excess of air, it burns completely,

provided the fires are not choked by the lack of air. At the same time, the oil flame can be mixed intimately and uniformly with the air, thus minimizing in the furnace the zones of poor oxygen content.

The fact that coal is a solid fuel does not prevent its being finally milled and blown as dust into the

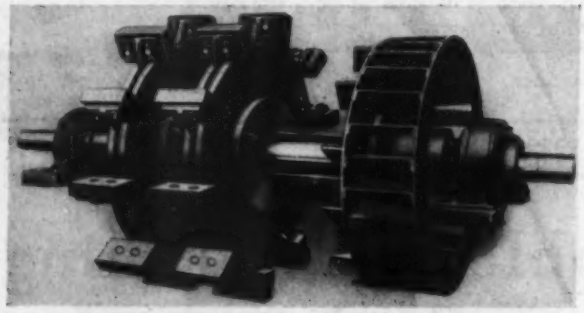


Fig. 1—Rotor of Simplex Mill. (Furnace Engineering Co., Inc.)

furnace, intimately mixed with the proper amount of air (carbureted). These particles of coal, suspended in the air as they burn, could be further stirred and mixed with a fresh supply of preheated air, thus avoiding zoning and assuring rapid propagation of combustion.

Such are the high spots of the problem of burning pulverized coal. From a large number of records of actual efficiencies obtained in actual day-in and day-out operation, it appears that while with hand firing as high as 74 per cent efficiency is sometimes obtained, the average efficiency is anywhere between 50 per cent and 65 per cent. With good stoker installations, carefully handled and guided by instrument indication, from 70 per cent to 78 per cent efficiencies are obtained. With pulverized coal, modern installations reach 90 per cent efficiency, and 80 to 84 per cent efficiency is rather the rule than the exception.

Efficiency is, however, only one side of the question, the other being that of the productive capacity of the steam boilers.

From the days of hand firing under the natural chimney draft, we inherited the fallacious notion that it requires 10 sq. ft. of heating surface to generate one horsepower (34.5 lb. of water of 212 deg. fahr. converted into dry steam at atmospheric pressure; so-called evaporation "from and at" . . .).

Obviously the amount of steam generated per sq. ft. depends upon time. As it takes 970.4 B.t.u. to evaporate 1 lb. of water, the supply of 1,940.8 B.t.u. will evaporate 2 lb. of water in an equal period of time. In other words, the boiler capacity depends not on its size but on the speed with which the heat can be supplied to the boiler water. Since pulverized coal has a far greater rate of propogation of combustion than solid lump coal, in modern practice 5, 3 and even 2 sq. ft. of heating surface produce boiler horsepower at a corresponding saving in the first cost of boiler installation. Here, however, we meet with a serious limiting factor. While it is true that water can be evaporated as fast as heat is supplied and absorbed by boiler water, the question is how fast can the steam be replaced by water; i. e., how rapid is the circulation ? In other words, since the capacity of a boiler is neither a function of its heating surface (within old accepted limits), nor of the rate of combustion, but a function of the speed of circulation, the use of pulverized fuel enhances the capacity of boilers beyond all previous figures. On the other hand, the use of water-cooled furnaces direct connected with the boiler compels consideration of its circulation conjointly with that of the boiler proper. The most frequent ratio of heating surface per boiler horsepower appears to be, in the modern practice, about 3 sq. ft.

From the operating standpoint, the use of pulverized coal, both under the boilers and in industrial and metallurgical furnaces, presents several specific problems, particularly in connection with the preparation and combustion of pulverized coal.

Preparation of Coal

One of the outstanding advantages of pulverized fuel is that many grades of coal which are difficult or even unfit for use on hand-fired grates or on

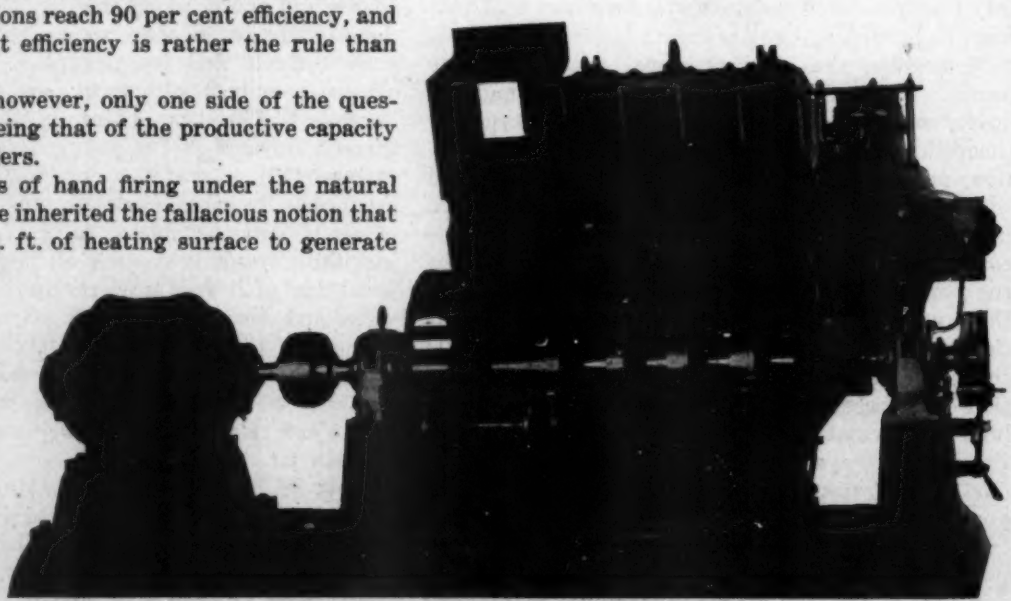


Fig. 2—Aero unit coal pulverizer with casing open. (Foster Wheeler Corporation)

stokers, because of large proportion of dust, low heating value, etc., can be efficiently burned in suspension if pulverized to 200-300 mesh.

But even the best grades of coal require a careful preparation, both as to **uniformity** of the size of particles, and their **fineness.** It is obvious that if coal is pulverized into particles of considerably varying sizes, two conditions will at once handicap the combustion. Firstly, the coarser grains will have different momentum when blown into the furnace than the finer grains, hence the time required for complete combustion will not be the same. Second, the ratio of surface to volume of the grains of different sizes will be different, with a consequent increase of time rate for complete combustion of the coarser grains. Moreover, as has been noted, relative zones of poor oxygen content in stoker-fired boilers will be in a measure applicable in cases of ununiform grading of coal particles; larger particles being enveloped by a film of oxygen-starved gases, which particles will be found eventually as minute grains of coke in the ash pit or even in the fly ash.

The process of pulverizing coal is therefore of considerable importance and many varieties of apparatus have been developed for the purpose. The paddle of chopping mills are to be found in many designs, some with paddles fixed to the rotor, some swinging, some having horizontal, and others vertical shafts, and a different number of stages of these paddles. These mills operate on the principle of partial crushing by impact of coal particles against the paddles and partial shearing of coal particles. The fan, usually built integrally, blows the pulverized coal, together with the so-called primary air, through the ducts to the burner. The high speed of this type of mill has its obvious disadvantages and the wear of the paddles appreciably affects the fineness of the coal particles. Of the better known mills of this group the "Simplex" (Fig. 1), the "Aero" (Fig. 2), and "Lopulco" (Fig. 3), are of the horizontal shaft type, while "Grindle" typifies the vertical shaft, multi-stage swinging hammer type mill. (Fig. 4).

Of distinctive design is the "Atrita" mill. This combines chopping knives and

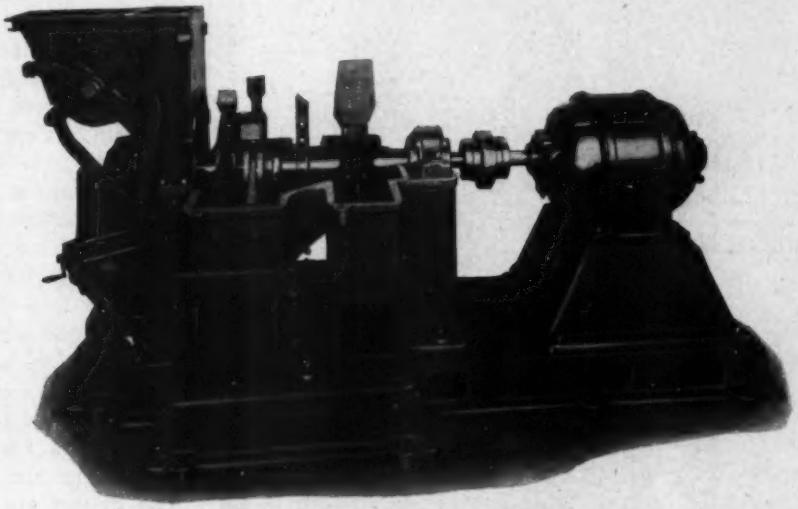


Fig. 3—Lopulco mill with upper part of casing removed. (Combustion Engineering Corporation)

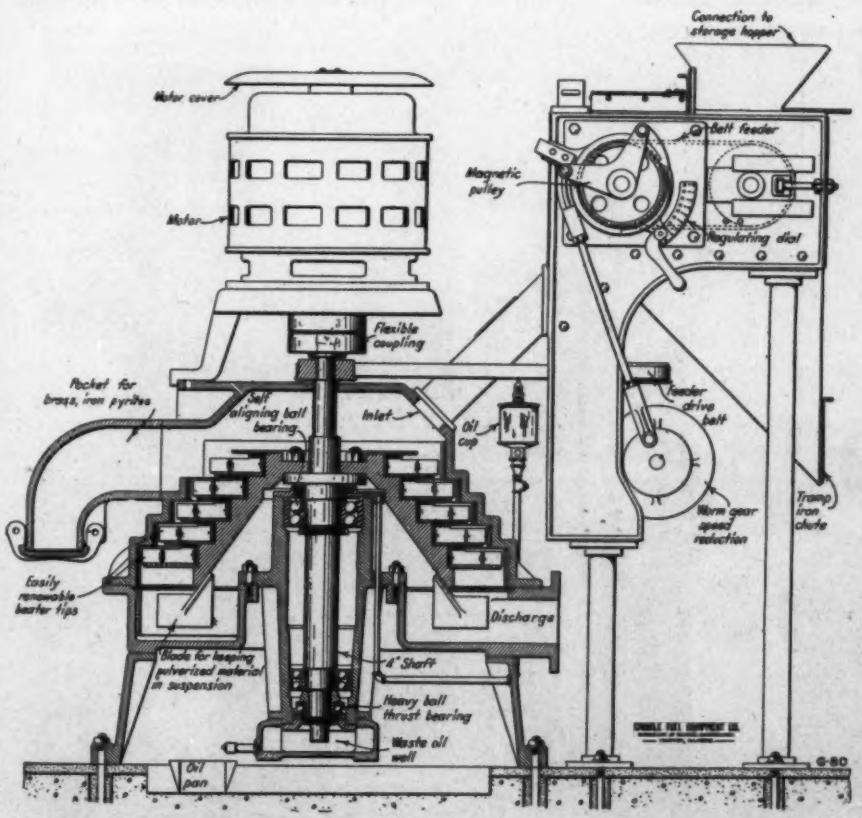


Fig. 4—Cross section showing multi-stage pulverizer construction and bearing arrangement. (Grindle Fuel Equipment Co.)

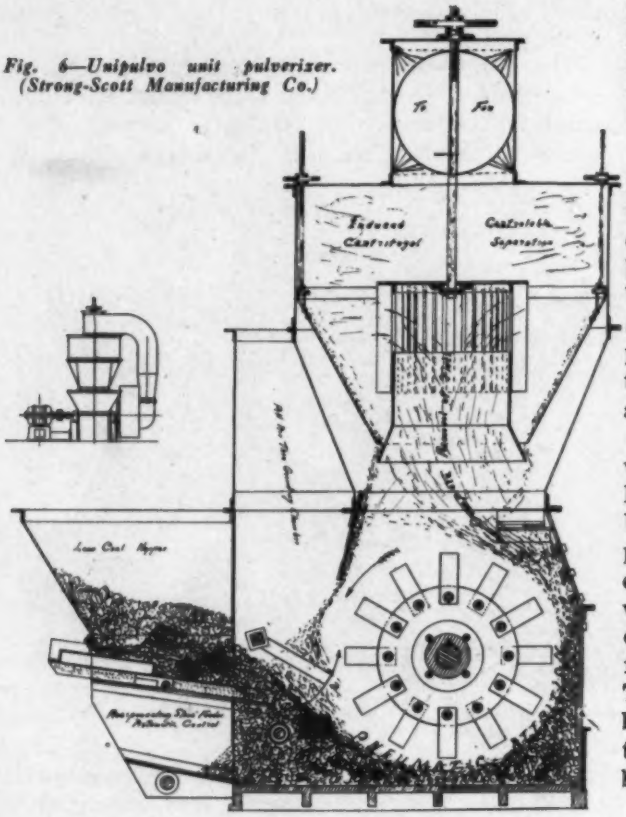


Fig. 6—Unipulvo unit pulverizer. (Strong-Scott Manufacturing Co.)

peg impact stages with air separation. This "two-effect" construction, together with flow of coal particles against the centrifugal force, is said to offer advantages not to be found in the simpler paddle mills. (Fig. 5).

Still another modification of a pulverizing coal mill is represented by the "Unipulvo" unite pulverizer (Fig. 6). The unique feature of this type of unit pulverizer is that the entire amount of combustion air is drawn into the pulverizing chamber. With preheated air it is asserted that mid-western screenings with as high a moisture content as 12 per cent can be burned. It is said that installation of this type are now generating in the paper industry alone upwards of 1,250,000 lb. of steam hourly.

Still another modification of an impact type pulverizer is found in the Unitype pulverizers, built by Erie City Iron Works. A typical installation of this Unitype pulverizer at the Consolidated Paper Company, Monroe, Mich., is shown in (Fig. 7). The machine consists of three-stage pulverizing chambers, with revolving paddles of gradually increasing diameter, and a fan at the extreme end of the shaft furnishing air through the adjustable air inlets. The driven air carries the pulverized coal to the burner. The general design of the pulverizer is said to be of a type that permits of all wearing parts being completely renewed within an hour's time.

A different principle is employed in mills utilizing

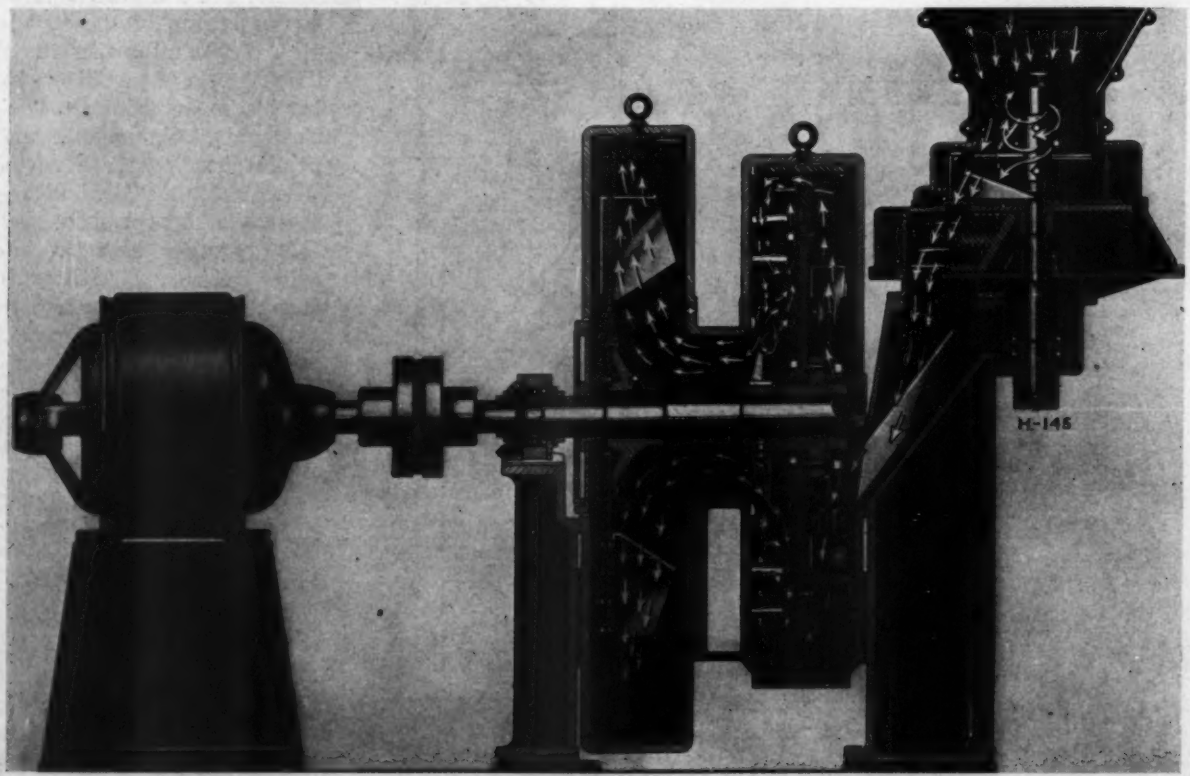


Fig. 5—The Riley Atrita unit pulverizer. (Riler Stoker Corporation)

rollers to crush coal under them. The coal in a mill of this style is not only granulated, but some impalpable powder is also produced, which is quite advantageous for proper combustion. Typical examples of this class are "Bethlehem" pulverizers (Fig. 8) and "Raymond" mill (Fig. 9).

The typical ball or tube mill of a type familiar in chemical laboratories and metallurgy, produces an impalpable coal powder, with simplicity of internal mechanism and at a low replacement and power cost. The prepared powder of the desired fineness is removed by the current of air against gravity, and the mill output is subject to regulation within considerable limits, quality not being conditioned by the high speed of the mill. This type is well represented by the "Kennedy" air-swept impact tube mill (Fig. 10), delivering up to 75 per cent of coal pulverized to pass 300 mesh.

Another characteristic example of a true ball mill is found in the Hardinge mill. This type has long been in use for reducing to a fine powder ordinary friable materials, such as ores, limestone, etc. It consists substantially of a cone filled with balls of various diameters. The cone revolves slowly at a constant speed which keeps the balls in motion. The balls classify themselves by size in relation to various diameters of conical section. The mill is capable therefore of producing a fine, impalpable powder,

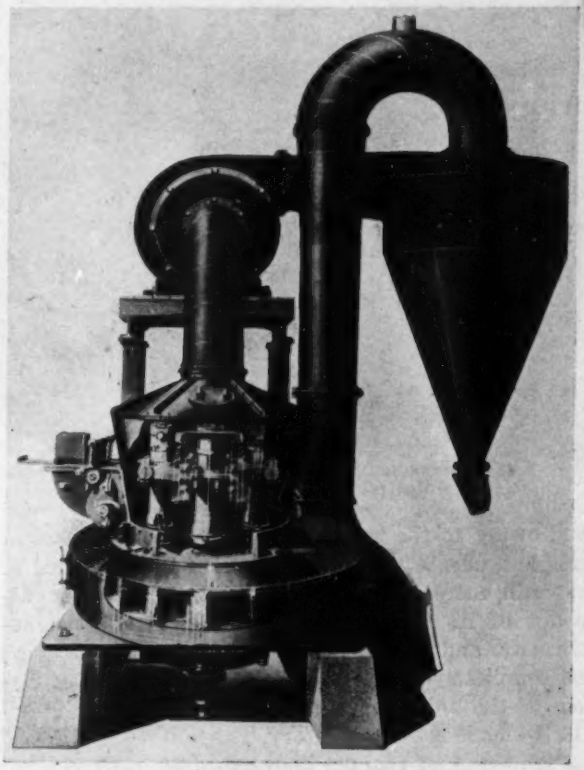


Fig. 9—Raymond mill. (Raymond Bros. Impact Pulverizer Co.)

Fig. 7—Photograph of ten Erie pulverizers for firing boilers at Consolidated Paper Co., Monroe, Mich. (Erie City Iron Works)

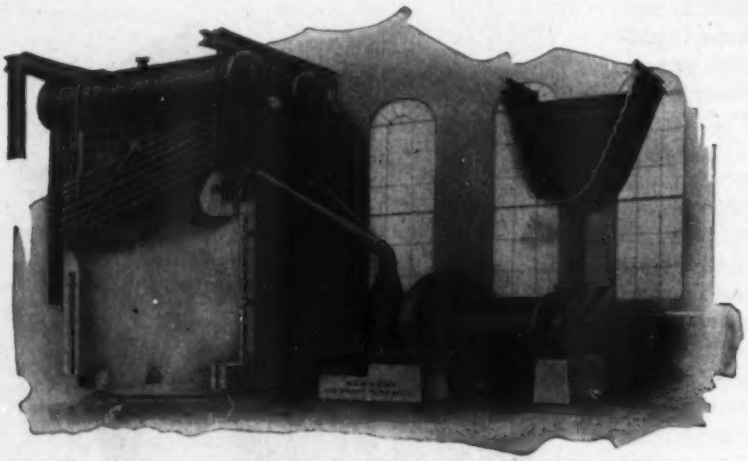


Fig. 10—Kennedy air-swept tube mill system. (Kennedy-Van Saun Manufacturing and Engineering Corporation)

and owing to the reverse air current, the classification is accurate; over-sized particles are returned to the mill, instead of being sent to the burner. On account of its ruggedness, fuels like river coal, anthracite, and Rhode Island graphite anthracite can be completely pulverized in it. The schematic layout of the unit is represented in Fig. 11, which is self-explanatory. The mill of 20,000 lb. of coal per hour capacity requires a motor of 175 hp. and a fan motor of 50 hp. capacity. This high power consumption is caused partly by the weight of the balls which alone amounts to 30,000 lb. An actual test reported by the International Railway Fuel Association indicated that the Hardinge mill, pulverizing twelve tons of 4-mesh river coal an hour, containing 3 per cent moisture, gave a pulverized coal, 81.6 per cent of which passed through 200 mesh, the power consumption being 25.32 kw.h. per ton for the mill, and 5.01 kw.h. for the exhaust fan. The trials on bituminous coal gave more than double this capacity for half the power consumption per ton. This mill, with proper control, could be equally well adapted for storage or unit system.

In actual practice the selection of this or that type or make of pulverizing mill, will depend, of course, upon many considerations that may influence the choice one way or another. In engineering it is an unpardonable sin to speak of "the best equipment"—best for what purpose and under what conditions rules the decision. Thus for dry coals, low in ash, a paddle mill or attrition mill will meet most of the requirements, while for coals high in moisture and of low fusing ash, a much finer pulverization and more uniform grading is to be secured, even if at a higher initial cost. Again, for a new boiler installation, when size and proportion of the furnace may be designed to meet the limitations of a coarser pulverization, the requirements would be less stringent than for the existing boiler setting of restricted furnace volume or even steel furnace, as in Scotch marine boilers, where only the finest, impalpable coal dust could be efficiently consumed.

Burner

The next important factor in combustion of powdered coal is its "atomization" or carburetion and spraying into furnace. Considering the required capacity as a constant, the factors affecting the maximum efficiency are: degree of fineness of coal

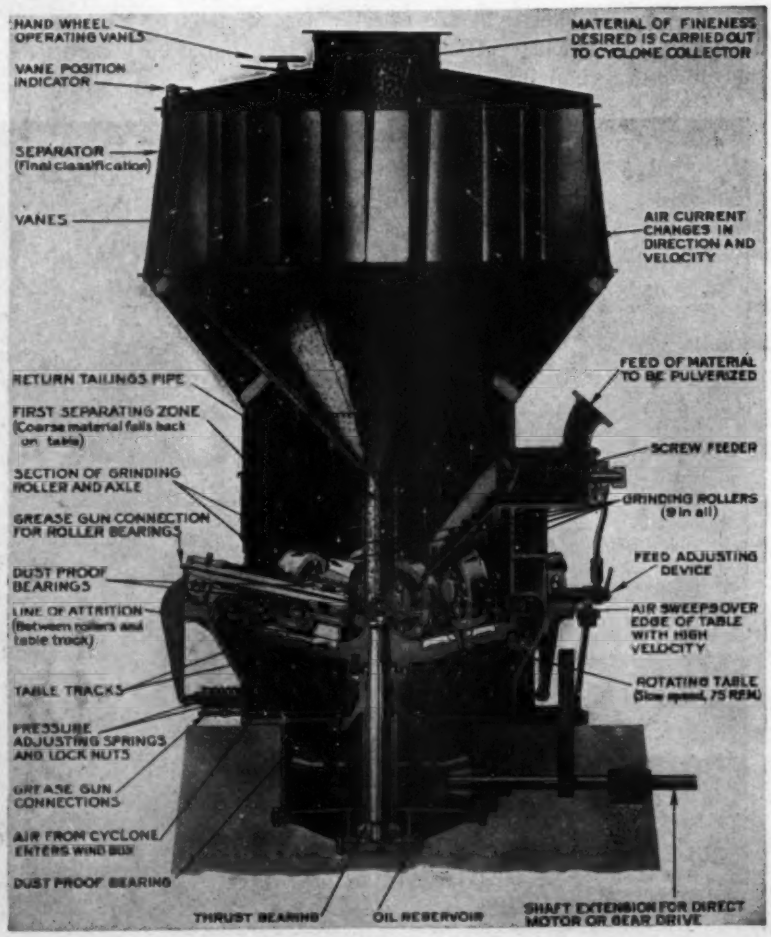

HAND WHEEL OPERATING VANES
VANE POSITION INDICATOR
SEPARATOR (Final classification)
VANES
RETURN TAILINGS PIPE
FIRST SEPARATING ZONE (Coarse material falls back on table)
SECTION OF GRINDING ROLLER AND AXLE
GREASE GUN CONNECTION FOR ROLLER BEARINGS
DUST PROOF BEARINGS
LINE OF ATTRITION (Between rollers and table track)
TABLE TRACKS
PRESSURE ADJUSTING SPRINGS AND LOCK NUTS
GREASE GUN CONNECTIONS
AIR FROM CYCLONE ENTERS WIND BOX
DUST PROOF BEARING
THRUST BEARING
OIL RESERVOIR
SHAFT EXTENSION FOR DIRECT MOTOR OR GEAR DRIVE
MATERIAL OF FINENESS DESIRED IS CARRIED OUT TO CYCLONE COLLECTOR
AIR CURRENT CHANGES IN DIRECTION AND VELOCITY
FEED OF MATERIAL TO BE PULVERIZED
SCREW FEEDER
GRINDING ROLLERS (9 in all)
FEED ADJUSTING DEVICE
AIR SWEEPS OVER EDGE OF TABLE WITH HIGH VELOCITY
ROTATING TABLE (Slow speed, 75 R.P.M.)

Fig. 8—Sectional view of Bethlehem pulverizer. (Bethlehem Steel Company)

particles, type of boiler, construction of furnace, etc.

Roughly speaking, there are two types of coal dust burners in successful practical use: stream line and turbulent burners. In both cases, the coal burner has to perform a double function: to carburet the coal dust by mixing it with the proper quantity of secondary air, and to shape the flame so that no portion of the fire-torch will be starved for oxygen.

A good illustration of the stream line type is the "Lopulco" fantail type burner (Fig. 12), designed for installation in the top of the furnace so that the flame is shot against the draft current and doubles up on itself near the bottom of the furnace. It is designed on the principle that a long flame travel is essential for complete combustion.

Another design of flat flame burner is typified by the "Riley" burner. It is placed horizontally with secondary air delivered by a special fan, and the swirling motion of the flame is secured by means of stationary fins creating eddy currents for the purpose of thorough carburetion; adjustable baffles further regulate the flow.

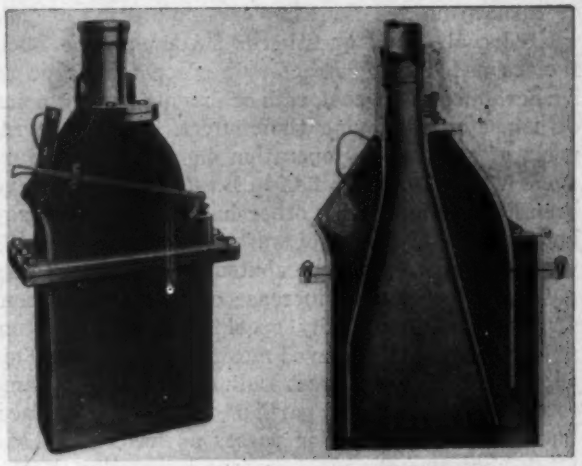


Fig. 12—Lopulco fantail burner. (Combustion Engineering Corporation)

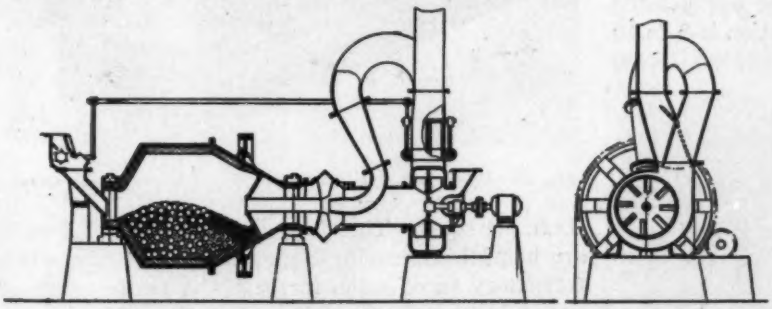


Fig. 11—Hardinge ball mill. (Hardinge Company, Inc.)

Of the circular flame burners, Lopulco, Peabody, Foster-Wheeler, Furnace Engineering, Atrita and Raymond are good examples.

In the Lopulco Horizontal Type burner (Fig. 13), secondary air is admitted to the coal stream through vanes at the point where the coal enters the furnace. The vanes are adjustable which permits control of the shape and character of the flame body. The manner in which the vanes are arranged insures thorough mixing of the coal and air. This method produces expansion of flame in the furnace. The turbulent principle is employed in the Riley flare type burner (Fig. 14). The coal dust in this case is sprayed through the vanes forming a cone of stratified streams. Secondary air supplied by a fan also passes through a set of adjustable vanes and has a circling motion contrarywise to that of the coal dust, forming a short flare outside the tip of the burner.

Furnace

There is much controversy in respect to the volume

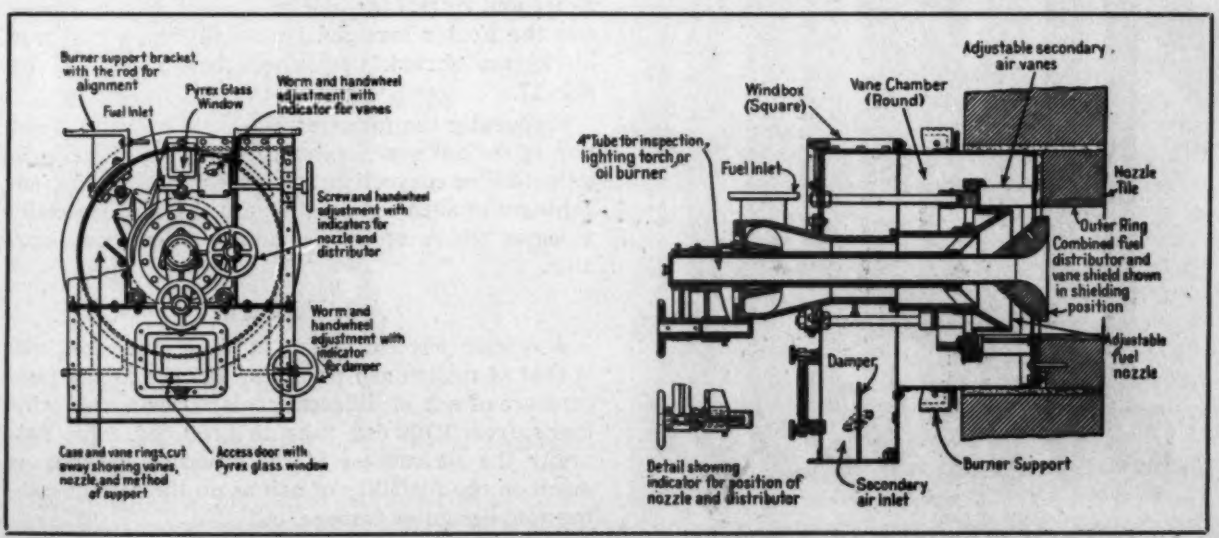

Burner support bracket, with the rod for alignment
Pyrex Glass Window
Worm and handwheel adjustment with indicator for vanes
Fuel Inlet
Screw and handwheel adjustment with indicators for nozzle and distributor
Worm and handwheel adjustment with indicator for damper
Case and vane rings, cut away showing vanes, nozzle and method of support
Access door with Pyrex glass window
Adjustable secondary air vanes
Windbox (Square)
Vane Chamber (Round)
4" Tube for inspection, lighting torch or oil burner
Fuel Inlet
Nozzle Tile
Outer Ring
Combined fuel distributor and vane shield shown in shielding position
Adjustable fuel nozzle
Damper
Detail showing indicator for position of nozzle and distributor
Secondary air inlet
Burner Support

Fig. 13—Sectional view of Lopulco horizontal type. (Combustion Engineering Corporation)

of furnace needed for complete combustion of pulverized coal. This question is a complex one, such factors as cost of refractory replacement, type of burner, fineness of coal, rate of driving, fusing point of ash, etc., all having their effect. There are reports of satisfactory operation on record with furnaces where 10,000 to 28,000 B.t.u. per cu. ft. have been liberated. On the other hand, the controversy between the advocates of water-cooled furnace walls vs. air-cooled seems to be abated by the hard reality indicating continuous increase of water-cooled construction. Theoretically speaking, the heat from pulverized coal is conveyed mostly by radiation. This applies not only to direct radiation from the flame to the directly exposed parts of the heating surface, but to the gas in boiler passes as well. An ideal black body absorbs most radiant heat, while bodies of lighter shades and gray are poorer absorbers. Hence let us consider if air-cooled furnace walls are the more efficient. As A. G. Christie has pointed out, the rate of heat transfer by radiation is 8 to 10 times faster than by convection, and reaches 75,000

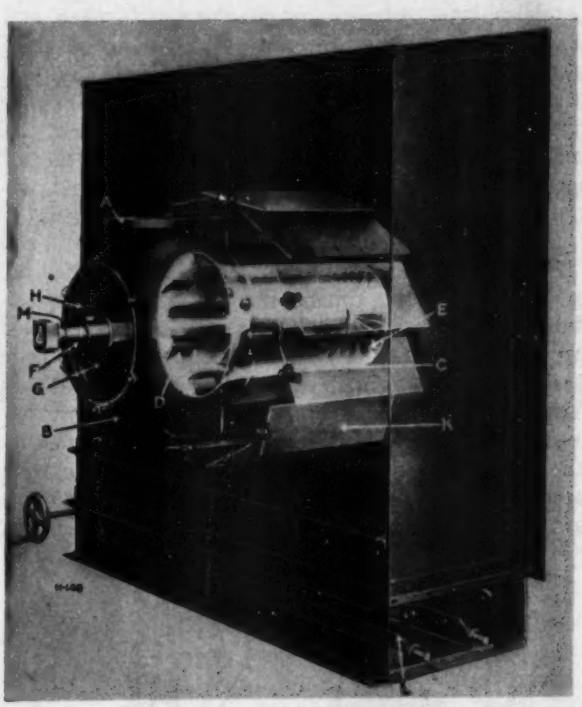


Fig. 14—Riley flare type burner. (Riler Stoker Corporation)

B.t.u. per sq. ft. Thus completely water-cooled walls are helpful in securing higher boiler capacity, while refractory faced walls increase the temperature of gases in the furnace, help ignition and promote higher heat transfer by convection in farther parts of the boiler.

The three most popular types of water-cooled furnace walls are the Combustion Engineering fin furnace (Fig. 15), where the water cooling tubes are provided with flat fins, making a complete metal exposure to the flame; the "Bailey" (Fig. 16), in which construction the water tubes are shielded by metal and refractory blocks clamped to the tubes; and the Foster armored type wall where cast-iron blocks are shrunk upon the tubes, illustrated by Fig. 17.

Frequently the furnace walls are faced with a section of radiant superheaters, installed in addition to or instead of convection type superheaters. The advantages of such combination are obvious, especially in cases where steam demand fluctuates considerably.

Ash Problem

A specific problem arising in firing pulverized coal is that of molten ash particles. As the fusing temperature of ash of different coals varies within wide limits, from 1,700 deg. fahr. to 2,800 deg. fahr., naturally the seriousness of the situation depends as much on the fusibility of ash as on the rate of combustion, design of furnace, etc.

Two general methods of approach are to be men-

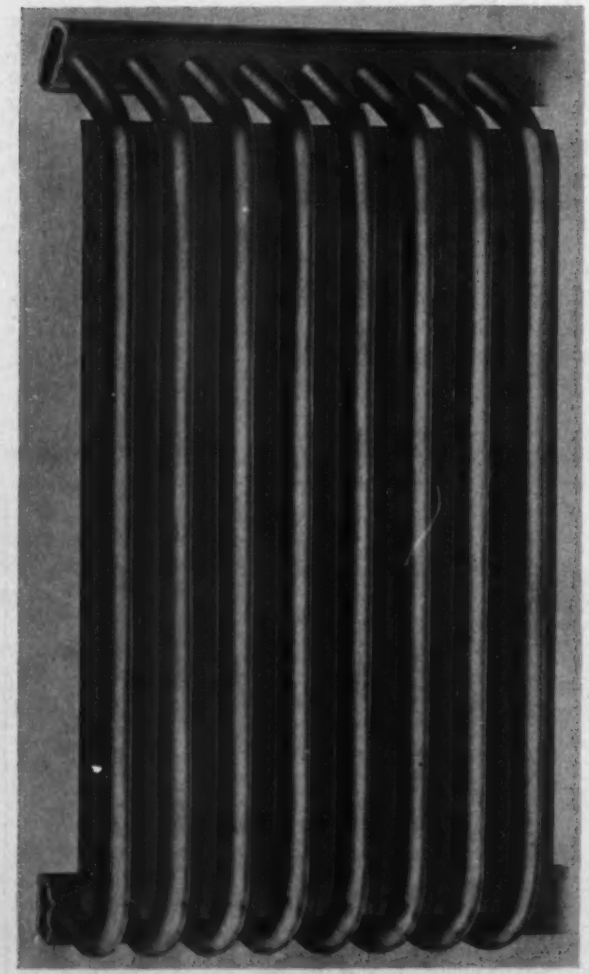


Fig. 15—C. E. fin type furnace wall. (Combustion Engineering Corporation)

tioned. The slag falling down to the bottom of the furnace may be cooled in its passage by falling through a cooler zone originating with water screen or tubes; or, on the contrary, completely melted and dropped into water for removal. The advantages of either method depend, of course, upon local conditions.

Conclusion

For the paper and pulp industry, two other specific applications of pulverized coal firing are of interest. One of these is the adaptability of this method of firing in connection with furnaces burning wood refuse; another in combination with black ash kilns direct connected with waste heat boilers. In both instances marked economies are promised.

In general, as the report of the Prime Movers Committee of the National Electric Light Association points out, there are indications that the unit system of pulverized coal firing is being continually extended, not only to smaller plants, but to the larger stations as well.

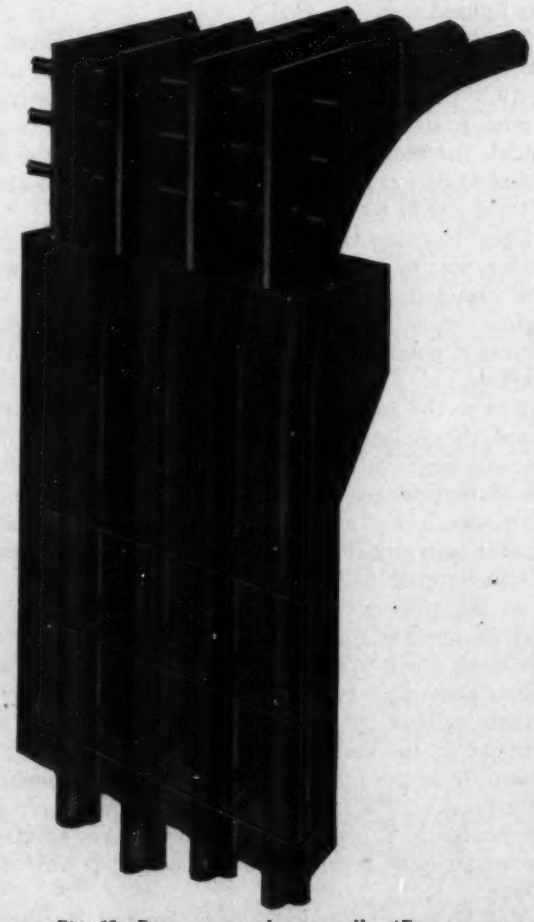


Fig. 17—Foster armored type wall. (Foster Wheeler Corporation)

Preheated air in pulverized coal furnaces is growing in use, because it increases the efficiency of combustion, decreases the length of the flame required and reduces the power required for pulverizing the fuel.

The use of water-cooled walls is also growing, as well as of combinations of water-cooled and air-cooled walls and radiant superheaters. The cost of maintenance of water-cooled walls is apparently lower than that of refractory walls.

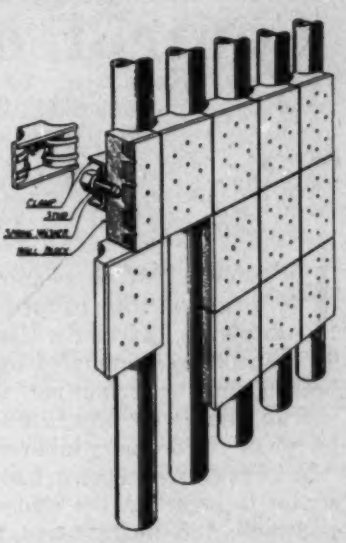


Fig. 16—Detail of Bailey furnace wall. (Fuller-Lehigh Company)

Such are the general tendencies in the art. Yet, no individual case can be treated successfully by merely going where the crowd goes, any more than one can expect to die at the age of an insurance company's average.

Scientific Management

THE following rules by W. H. Leffingwell will, if followed, assure progress in eliminating waste, as waste cannot exist under scientific management, no matter what kind of a plant is being operated:

1—Define your purpose. You must know what is to be done before you can know how. This is your master task.

2—Analyze your problem. Your master task will then break up into many detail tasks. Consider them all—neglect none.

3—Seek the facts. Study every condition governing each task and the undesirable element to be eliminated and the desirable element to be retained. Then standardize right conditions.

4—Devise the one best method. Aim to conserve energy, time, space, material. Determine relation of details to master task.

5—Find the person best fitted. For each task certain personal qualities are essential. In each person certain qualities predominate. Find the person best fitted.

6—Teach the person best fitted the one best method. Not by driving, but by thorough, patient teaching are understanding and skill developed.

7—Plan carefully. Right planning of arrangement and sequence of work will enable you to accomplish tasks in logical order, accurately, quickly, economically.

8—Win co-operation. Co-operation means working together. It cannot be demanded; it must be won. Accept your share of the responsibility. Respect the rights and aspirations of others.

Control of Sizing Material Losses

Investigation Made in Board Mill Revealed Causes of Size and Alum Losses

By E. FRANK WHITTINGTON

Author of "Excessive Use of Sizing Materials" and "Technical Control for Board Mills"

IN October 1927, there appeared in PAPER TRADE, a magazine then published in Chicago, a short article on "Excessive Use of Sizing Materials". This article was prompted by the discovery having been made in a certain mill that considerably more size and alum were being used than could be accounted for by the ordinary mill records.

A lengthy investigation had been carried on by the writer to ascertain the causes of the discrepancies and these were finally found. Possible solutions were suggested at that time and were being tried out in the mill but it was too early in the investigation to report any definite figures as to results obtained. The actual losses and their cost to the company were omitted and the percentages only, were given.

Since the investigation, noted above, some very intensive work has been carried on in an endeavor to control the use of the sizing materials, and by following the methods suggested at that time some very satisfactory results have been obtained.

After two years of work it is now possible to present some definite facts and figures which should be of interest to those connected with production or control work. The actual results were accomplished in slightly over a year, the balance of the second year having been spent in obtaining additional data to sustain and verify the results previously obtained.

During the year 1926, the John Doe Company (figurative name) according to their fiscal inventories of January 1, 1926, January 1, 1927 and their purchase records, actually used 1,235,687 pounds of size. According to the beater furnish tickets and the beater room reports of beaters furnished, there were 1,035,931 pounds used. The alum actually used in 1926 determined by inventory amounted to 1,284,799 pounds while the amount recorded from the beater orders and reports was 1,193,712 pounds. Naturally, the latter amounts, in both cases, were the ones charged against the various orders by the cost department and the ones upon which the sizing cost was figured.

CALIBRATION OF TANKS

Main Size Storage Tank—See Table No. 2

Size Measuring Tank	4'6" Diameter 1" = 10.322 Gallons = 93.4 lbs
	1 Batch = 25" = 2335 lbs
Emulsion Tanks	8'6¼" Diameter 6'10½" Deep
	1 Batch of Emulsion = 6'9½" = 2926 Gallons
	2926 Gallons contain 2335 lbs. 1 Gal. = .7980 lbs.
	1" in tank = 35.9 Gallons = 28.65 lbs. size
Beater Tanks	31" Diameter
	1" = 3.26 Gallons = 2.6 lbs. size
Alum Stored In Bags	1 Bag = 200 lbs. 7⅓ Bags = 1 Batch
Mixing Tanks	6'9½" Diameter 5'7" Deep
	1 Batch = 66" = 1492 Gallons = 1500 lbs. Alum
	1 Gallon = 1.007 lbs. Alum
	1" = 22.606 Gallons = 22.727 lbs.
Beater Tanks	36¼" Diameter
	1" = 2.34 Gallons = 2.36 lbs. Alum

Table 1—Capacities of the various tanks and their measurement equivalents in pounds of size or alum.

The loss to the John Doe Company amounted to 199,756 pounds of size and 91,087 pounds of alum or 19.3 per cent and 7.62 per cent respectively. Figuring size at an average value of 4 cents per pound, the monetary value becomes $7,990 for size and at $1.31 per hundred amounts to $1,192 for alum. A total loss of $9,182 in one year.

Upon learning the above figures, the first step of course, was to determine the reason. Suspicions were first directed at the beater room. Perhaps this was logical reasoning; perhaps only a hunch, but nevertheless it pointed the way to the biggest portion of the loss.

Due to the fact that this mill was manufacturing board, the condition was perhaps exaggerated or shall we say aggravated? In a sulphite furnish calling for sixteen inches of size emulsion, the addition of seventeen inches is an error of 6 per cent, while in a news furnish calling for 3 inches of size this same one inch extra means 33⅓ per cent loss.

At the time of the survey this mill was using a Shartle breaker for pulping the old newspapers and the slush stock pumped to the machine beaters at a consistency of 3 per cent, where it had a 15 or 20 minute mixing with size and alum. The beater was dropped at the end of 20 minutes and refilled. This meant 72 beaters per day on each of three machines or a total of 216 beaters. Allowing 1 inch of waste per beater, at 2.6 pounds of size per inch of emulsion, we would have a total of 562 pounds per day of 24 hours.

The above may sound like fiction but it must be remembered that this mill had a total size waste of nearly 200,000 pounds in one year. Investigation revealed that such a condition was not only probable but that even worse circumstances occurred at intervals. Just one case will be cited for illustration.

It should perhaps, be explained that the inves-

MEASUREMENT EQUIVALENTS

Main Size Storage Tank

Gauge in inches	Pounds	Gauge in inches	Pounds
0 inch	= 1500	3¾ inch	= 5470
¼ "	= 1755	4 "	= 5740
½ "	= 2015	4¼ "	= 6010
¾ "	= 2270	4½ "	= 6280
1 "	= 2530	4¾ "	= 6550
1¼ "	= 2790	5 "	= 6820
1½ "	= 3055	5¼ "	= 7090
1¾ "	= 3320	5½ "	= 7360
2 "	= 3585	5¾ "	= 7630
2¼ "	= 3855	6 "	= 7900
2½ "	= 4120	6¼ "	= 8171
2¾ "	= 4390	6½ "	= 8442
3 "	= 4660	6¾ "	= 8712
3¼ "	= 4930	7 "	= 8983
3½ "	= 5200	8 "	= 10066

Over 7 inches, 1 inch = 1083 lbs.

Table 2—Conversion of the gauge measurement to pounds of size in the main size storage tank

tigation carried on by the writer was conducted for quite some time without the knowledge of anyone but himself, and this probably helped materially in obtaining the data being sought. Had this not been true, it is probable that the case about to be related, and many others observed, would never have occurred, because the persons involved would have been on guard.

The case mentioned above which illustrated extreme conditions largely responsible for the great size and alum losses occurred as follows:- The order being made at the time, called for a news center with 3 inches of size to each beater. On this occasion the hour was nearing 3 P. M., or the change of shift time for the day tour. The Plug-puller opened the main valve to fill the size tank, immediately going to the wash room to clean up while the tank filled. That was all right —**but** it so happened that the line leading from the tank to the beater was wide open. The size immediately began flowing into the beater and of course was filling the tank at the same time. By the time the operator returned to his job, there was about 6 inches of size in the tank. He shut off the main valve and allowed the tank to drain into the beater. The order called for 3 inches and there were at least 9 inches run in.

The fact was firmly established that a large portion of the losses were in the beater room. However, the survey was carried back to the emulsion department and there it was found that the man responsible for the manufacture of emulsion, was using very close to correct amount and sometimes a trifle less. The check upon this department was made by a weekly inventory of the thick size on hand and comparing the amounts used from week to week with the number of tanks of emulsion made.

Conclusions After Preliminary Survey

The preliminary survey was completed by the middle of February and the following conclusions drawn:-

1—The greater proportion of the losses on size and alum are due to carelessness and inaccuracy in the measuring of solutions going into the beater.

2—Direct technical control can apply only in determining and recording variations and differences in size and alum consumption.

3—Indirectly, technical control should aid in curing the discrepancies by making known the exact errors from week to week and posting them where the ones responsible can see.

4—The direct way to eliminate the trouble is to appeal to the men responsible and make them feel their responsibility in the matter.

Before starting on a campaign for reducing size and alum losses, a thorough calibration was made of all equipment involved. See Table 1. This included

RECORD OF THICK SIZE

INVENTORY DATE	JAN 1/1929	MARCH 1	APRIL 1	MAY 24	JULY 31	AUG 7
MAIN STORAGE TANK	74501	EMPTY	29560	58382	25110	16293
LIFTING ARM	2880		2880	2880	2880	2880
MEASURING TANK	3072	3052	3036	3503	3003	2919
EMULSION STORAGE	464	1684	1740	2650	2077	2865
BEATER TANKS					44	
TOTAL	80942	4766	37231	69423	43694	24957
CRUSHED	71960	73060 / 48960	71180			69120
TOTAL	152902	126786	108411			94077
NEW TOTAL	4766	37231	82771	43694	24957	71949
POUNDS USED	148136	89555	25640	18799	18660	23145
CALCULATED POUNDS	128712	75077	25524	18129	18041	21151
DIFFERENCE	19424	14478	119	669	619	992
% DIFFERENCE	15.1%	19.3%	.47%	3.6%	3.4%	4.7%

RECORD OF ALUM

RAGS	54400	6800	24800	24800	6800	40000
STORAGE TANKS			967	1078	1600	1163
BEATER TANKS						
TOTAL	54400	6800	25767	25878	8400	41163
CRUSHED	120000	120000	60000	60000		
TOTAL	174400	126800	85767	85878		
NEW TOTAL	6800	85767	59033	63600	41163	15794
POUNDS USED	167600	101593	26733	22278	22437	25369
CALCULATED POUNDS	164968	99935	25681	21870	20941	23751
DIFFERENCE	2632	1658	611	408	1496	1618
% DIFFERENCE	1.57%	1.62%	2.3%	1.8%	7.1%	6.4%

Table 3—Portions of the weekly records kept during the first year

careful measurement of all measuring tanks at the beaters and in many cases involved the installation of new glass gauges. The large size emulsion storage tanks were carefully measured and the size of the heating tank, from which the size is blown through a cone mixer with water to form the emulsion, was very carefully calibrated to allow for the heating coil in the bottom. This coil would greatly affect the amount of size being used if the tank were emptied in making a batch. The main thick size storage tank was the biggest job. It was allowed to run down to empty, washed out, and the writer made careful measurements of the inside. It was found that the floor was not level, so that was sounded by running in sufficient water to cover the entire floor and then measuring the water depth at regular intervals both lengthwise and across. The peculiar condition found was that the outlet end of the tank was a trifle higher than the opposite end. The lower end was the only available point for measuring the size from the outside. It was also found that there was a pocket in one corner. These variations in floor level were taken into consideration in tabulating a table of weight equivalents for this tank. The first part of this conversion table is reproduced in Table 2. The calculations on all size equipment were made on the basis of pounds of thick size per inch of depth.

LOSSES (L) OR SAVINGS (S) 1927

	SIZE				ALUM			
	ACTUALLY USED	CALCULATED	DIFFERENCE	% DIFF.	ACTUALLY USED	CALCULATED	DIFFERENCE	% DIFF.
JAN'Y & FEB	148136	128718	19424	L 15.15%	167600	167368	232	L 1.9%
MARCH	91790	75077	16713	L 18.85%	101533	98935	2698	L 2.65%
APRIL	80569	80563	6	L .07%	94267	95624	1357	S 1.43%
MAY	67264	60448	6816	L 10.16%	78600	81931	3331	S 4.06%
JUNE	69611	72699	3088	S 4.45%	85200	88140	2940	S 3.34%
JULY	53897	51232	2665	L 5.20%	64387	61960	2422	L 3.91%
AUGUST	84977	83585	1394	L 1.67%	101398	96408	4890	L 5.07%
SEPTEMBER	83263	76702	6561	L 8.55%	97708	88202	9506	L 10.76%
OCTOBER	71401	70957	444	L .63%	86122	82294	3818	L 4.63%
NOVEMBER	71798	73535	1737	S 2.36%	78935	83093	4158	S 5.00%
DECEMBER	60561	59330	1231	L 2.25%	61947	65811	3864	S 5.87%

Table 4—Differences on size and alum by months in 1927

The calibration on alum equipment was just as thorough as on that of size but involved much less work because of only two types of tanks and the main storage being in bags, easily counted. The capacities of these tanks were based on pounds of dry alum per inch of depth and the figures are included in Table 1.

To facilitate measurements of the size storage tank a measuring device was installed, consisting of a guide plate mounted on the side of the man hole and having a 9/16 inch hole through which a ½ inch iron rod could be lowered into the tank. Upon removing the rod, all excess size is scraped off, leaving just enough to show the depth. The rod was marked off in ¼ inch divisions with a longer mark

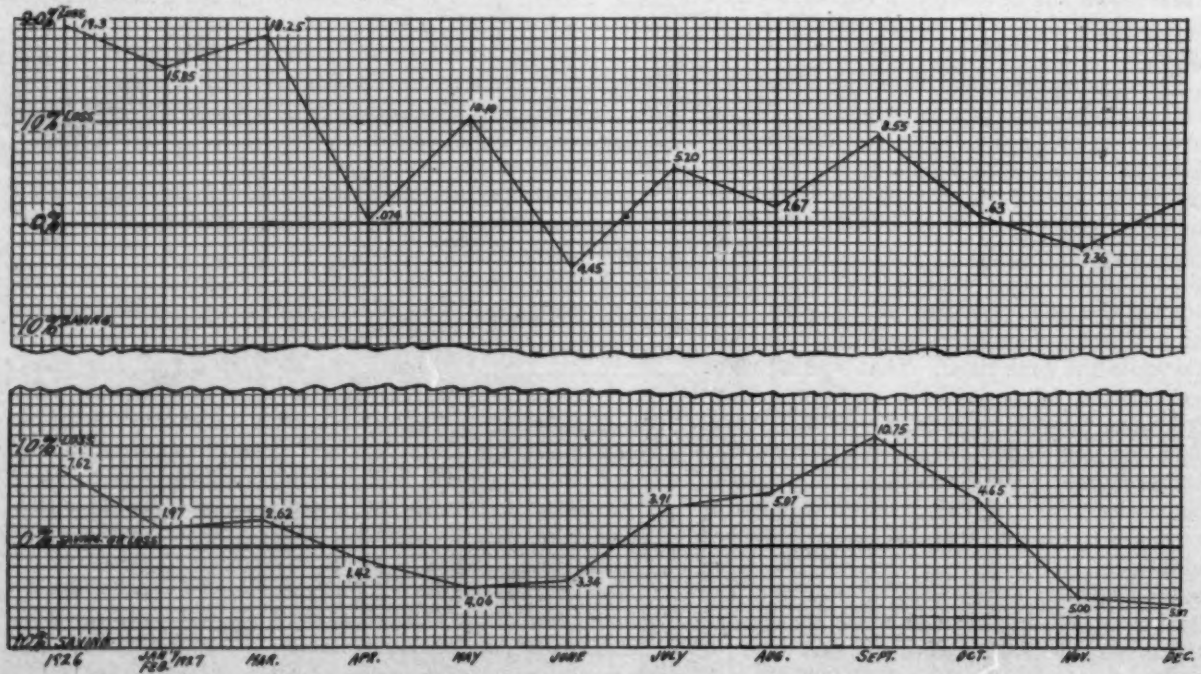


Fig. 6—Graphic presentation of percentage differences shown in Tables 4 and 5. Upper curve, size; lower curve, alum.

LOSSES (L) OR SAVINGS (S) 1928

	SIZE				ALUM			
	ACTUALLY USED	CALCULATED	DIFFERENCE	% DIFF.	ACTUALLY USED	CALCULATED	DIFFERENCE	% DIFF
JANUARY	60787	56896	3891	L 6.84%	65762	63221	2741	L 4.33%
FEBRUARY	62641	61256	1385	L 2.27%	63516	64241	725	S 1.68%
MARCH	65245	62167	3078	L 4.95%	63737	65747	2010	S 3.06%
APRIL	79211	79173	38	L .048%	81945	84377	2432	S 2.88%
MAY	99372	99960	588	S .59%	103321	107470	4149	S 3.87%
JUNE	79406	75193	4213	L 5.60%	82440	82094	346	L .42%
JULY	56560	56870	310	S .54%	62398	60094	2304	L 3.83%
AUGUST	95793	101137	5369	S 5.30%	105609	107462	1853	S 1.73%
SEPTEMBER	82720	85712	2992	S 3.49%	89614	90112	498	S .55%
OCTOBER	148327	157014	8687	S 5.54%	163650	166225	2575	S 1.55%
NOVEMBER	111636	114581	3045	S 2.65%	130925	123230	7695	L 6.55%
DECEMBER	102905	103540	635	S .61%	119629	117542	2087	L 1.77%

Table 5—Differences on size and alum by months in 1928

for each inch and the foot mark completely encircling the rod. When not in use, this rod stood in a column of circulating warm water so that each time it was used a clean surface was available.

Everything being set in the way of calibrations and methods of measuring, a complete inventory was taken early in the morning of March 1, 1927. This inventory included absolutely all tanks, even the small tanks at the beaters. A tank car of size which was all ready to empty, and which had been weighed, was drained into the storage tank and upon switching out was reweighed to give the exact amount of size received. (There is bound to be some left in the car after draining). It might be explained that in all cases, from here on, tank cars were unloaded on Saturday after measurements had been taken, or early in the week, to allow for cooling and contraction to tank temperature of approximately 100° Fahr. before the next measurement. All tank cars were weighed in and out by the railroad, so we had the net amount of size unloaded each time. Table 3 illustrates a portion of the records kept of the inventories. From April 10th on, the inventory was taken every week.

Losses Reduced

When the figures for March were available they were posted in the beater room and reference to Table 4 shows what the immediate reaction was. For some unexplainable reason, the alum did not get such a jolt as the size. The saying 'A new broom sweeps clean' is old but true as can be seen by reference to the latter part of Table 3 and Table 4. Everything seemed to be going so smoothly that the posting of results was discontinued after a few weeks with the results shown. The broken lines indicate a period where the weekly differences were a small saving or a very small loss.

After the losses began to be apparent again, nothing was said for a few weeks thinking it might be only temporary. However, it seemed not to be, so notices were again posted and the result was the

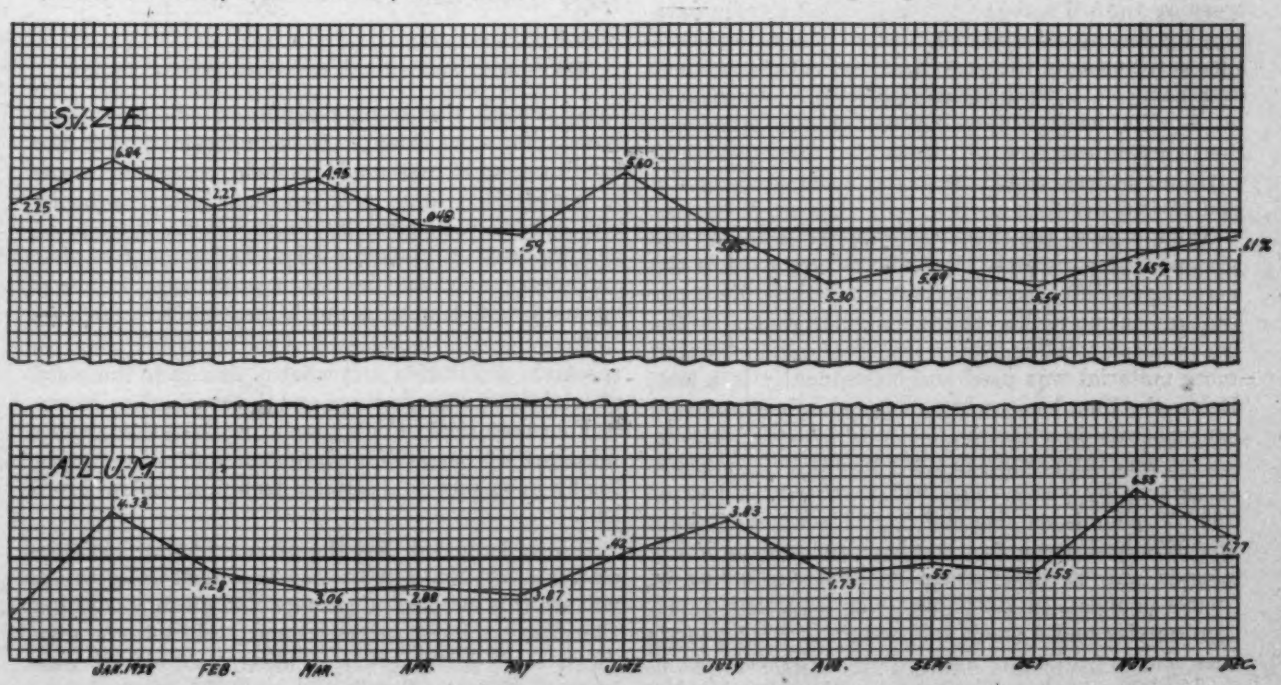


Fig. 6—Graphic presentation of percentage differences shown in Tables 4 and 5. Upper curve, size; lower curve, alum

	SIZE				ALUM			
	1926	1927	1928	1929	1926	1927	1928	1929
Inventory Jan'y 1	51640	79133	34613	10592	19199	54400	57589	20846
Receipts for year	1263180	833340	1021760		1320000	1020000	1096000	
Total	1314820	912473	1056373		1339199	1074400	1153589	
New Inventory	79133	34613	10592		54400	57589	20846	
Used	1235687	877860	1045781		1284799	1016811	1132743	
Calculated	1035931	822631	1053495		1193712	1026899	1131915	
Difference	199756	55179	7714		91087	10088	828	
	19.3%	6.72%	.73%		7.62%	.98%	.073%	
Value	$7990	$2207	$308		$1192	$132	$11	
Loss or Saving	Loss	Loss	Saving		Loss	Saving	Loss	

Table 7—Differences by years on size and alum and their values

same as before. At this time to add a little stimulus to the affair, the company agreed to pay a small bonus to the responsible men each month in which a saving was shown or if the losses were negligible. Nothing was said about the checks until the first ones were passed out. Needless to say it was not necessary to post notices after that, but the writer was eagerly quizzed right after the first of every month to learn whether there had been a saving made.

Enthusiasm was so strong that it became necessary to warn against using too little size and alum. The desire was not to show a big saving but to get the two figures to balance. The ideal condition would be zero saving or loss but this would be physically impossible. The second best would be a very slight loss, less than 1 per cent.

Table 4 tabulates the differences on size and alum by months for 1927.

At the end of 1927, everything seemed to be running very well and the differences were gradually working toward zero, so it was decided to eliminate the weekly inventories, and for 1928 the measurements were taken the first of each month, and when this came on a working day they were taken at 7 A. M. The weekly inventory and check up had put considerable extra work on the cost department in dividing orders which were not completed at the end of the week.

Table 5 gives the tabulated data for 1928 and the accompanying curve is a graphic presentation of the percentage differences in Tables 4 and 5. Zero per cent indicating no loss or saving is designated by the heavy horizontal line. Above the zero line denotes that more material was used and consequently is a loss. Below the line denotes less material being used and consequently is a saving.

It is very interesting to study briefly the composite of figures by years. In 1926 there was a loss of 199,756 pounds on size and 91,087 pounds of alum. In 1927 the loss on size had been reduced to 55,179 pounds and on alum there had been a saving of 10,088 pounds. In 1928 there was a further reduction on size and a small net saving of 7,714 pounds was shown while the alum showed the very small loss of 828 pounds. The total monetary loss in 1926 on size and alum was $9,182; In 1927, $2,075; In 1928, a saving of $297. Table 7 shows a condensed compilation of the above and may be easier read. The same is illustrated in Figure 8.

Systematic Checking

The matter of Technical Control in any paper mill involves two outstanding points; namely, accuracy of work, and co-operation of all affected persons. The failure of either phase will nullify any work started.

It has been attempted in the foregoing article to bring as forcibly as possible to those interested (and this should include everyone from the president down) the value of a systematic checking not only on size and alum but on practically any raw material.

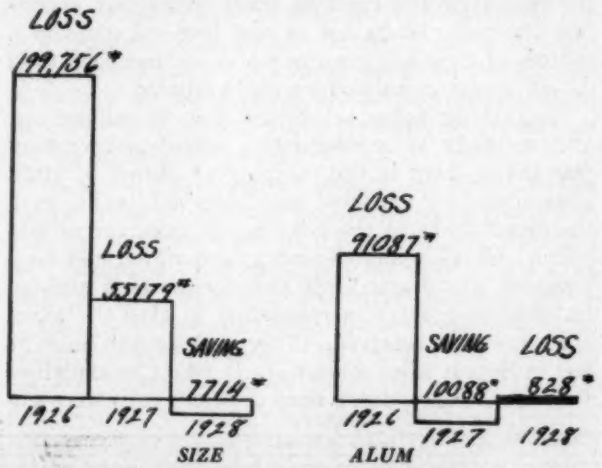


Fig. 8—Block illustration of differences shown in Table 7

True enough the specific condition explained may have been exceptional. It is understood that the condition could and would probably be much worse in board mills than in those manufacturing books and bonds, due primarily to the large number of beaters dropped having a very small amount of size, and where, as stated before, a small error in measurement would mean a much larger percentage.

To some, the work carried out might appear as research, and that is just what is was up to the point of establishing the findings and the conclusions drawn in February 1927. For a time after that, there was a mingling of research and control until the former finally gave way to a strictly technical control problem.

It is to be hoped that the person who sent in Special Inquiry No. 119 to the Technical Association will see this article and perhaps will glean something therefrom. It is further hoped that others may glean some information or ideas also, else it may be "Love's Labor Lost".

Cost Accounting in the Paper Industry

Part IV—Standards; Their Principles and Uses. (Cont'd)[1]

By D. A. WILCOX
Oxford Paper Company, New York

SUPPLIES—In starting a new cost system where new centers are formed, it is sometimes quite difficult to make any accurate estimates of the amount of supplies normally used, especially for the miscellaneous and small items. It is not to be expected that any great degree of accuracy can be achieved immediately and it is only after an experience of several years that really reliable standard can be set. After the system has been in operation for a while, records should be compiled which will be very helpful.

In laying out the system it is best to classify the items of supplies in the major lines, such as belting, lubricants, felts, wires, jackets, screen plates, twine, wrappers, miscellaneous items, such as brooms, etc., and any others that may appear to be of sufficient importance to warrant a separate classification. As the actual expenses go on, they are then charged to the proper center and classification, and at the end of a year the management should know exactly how much was spent in each center for felts, wires, lubricants, etc.

In setting the standards where records are available, the experience of past years should be of great help in estimating the expenses for the year ahead. It is well to use past averages blindly, but they must receive consideration. In using them, attention must be paid to the degree of operation for that year, increasing the average where the center was down more than normal, or decreasing it where it ran up beyond normal. Price changes must also be taken into account, for if prices have changed violently from year to year it is not to be expected that the expenses for the following year will be at the average rate. A good way is to take the actual expenses for each classification for three years past, correcting for degree of operations and price changes and then set a tentative standard for the following year. This should be passed on to the mill manager and foremen for consideration and the final standard set as a result of a mutual agreement.

The following example will illustrate:

Wrappers for the Finishing Room

Year 1910, value of wrappers actually used	$200,000
Days operated	285
Average price (ton)	60
Year 1911, value of wrappers actually used	$185,000
Days operated	250
Average price (ton)	50
Year 1912, value of wrappers actually used	$210,000
Days operated	310
Price (ton)	45

It is desired to set the standard for the year 1913 on the basis of 310 days with an average price of $55 a ton.

Corrections for the number of days and the average prices may be made in the following manner:

Year	Actual expense	Raised to basis of 310 days	On basis of $45 a ton
1910	$200,000	$217,600	$163,200
1911	185,000	229,300	206,370
1912	210,000	210,000	210,000
			$579,570
		Average per annum	$193,190

This gives us a starting point but the really difficult part is before us. We know the average expense for the last three years, but what shall we use as a standard for the year 1913? If we are satisfied that no improvement may be made, then the average (adjusted for the 1913 price of $55 a ton) may be used. However, we should consider whether or not this cannot be improved upon. Is there a possibility that there is some waste in the use of wrappers? If so, we should not be satisfied with the average of the past few years, but set a standard which will require greater efficiency in the use of wrappers. This is not a job for the cost accountant, but rather for the mill management. The best way is for the cost department to secure the averages for the principal items of expense as above, submit them to the mill staff for their guidance and request them to set the standards. They should then be carefully scrutinized by the executive officers in charge of this work and a final standard set by mutual agreement that will be satisfactory to all. Let us assume that in this case the figure of $175,000 is decided upon. As this is based on an average on the basis of wrappers at $45 a ton and the estimated cost will be $55, it will be necessary to apply this correction and the final figure will appear at $213,850.

Wherever possible, the standard should be set on the basis of physical units, such as tons of wrappers, number of wires, etc., a superior method, because it avoids the difficulty and errors incident to making the price corrections above.

It is obvious that common sense should govern the extent to which the work should be undertaken. For small items of expense amounting to less than $50 a month, it would be a waste of time to make elaborate corrections for price, etc., but for major items it becomes quite important.

[1]Mr. Wilcox's series of articles, of which this is a continuation of Part IV, began in the September, 1928 issue of The Paper Industry. Parts II and III and the first chapter of Part IV were published in the November '28, January and February '29 issues respectively.

In starting a new system, where there are no previous records to use as a basis, the accountant works at a decided disadvantage. In such a case he should consult freely with the foremen in charge of the various departments and get their estimates as to past expenses as closely as possible. It he is familiar with the practice in other mills of the same character it will be of great assistance to him. In any event all he can do is to set the best standards he can, trusting rather than expecting that they will be somewhere near right and then revise them every six months or so until he becomes convinced that he has some basis on which to stand.

The first year or two of any new cost system, so far as standards are concerned, is apt to be a period of collecting data rather than actual control. Of course every mill has certain figures very well established, such as wire life, etc., which afford good standards right at the beginning, but there are a lot of items that only time can develop. This is especially true of supplies and repairs.

Compensation insurance, being largely proportionate to the payroll is easily set when the rate per $100 is known.

Steam—This is one of the most difficult and most important items in a paper mill. Where flow meters are used it is a simple matter to get the actual charges for steam, but setting standards for the department's use is not so easy. Primarily it is an engineering problem and the engineers must be consulted freely in setting a standard. To a large extent, steam usage varies with the production made, but in addition there is, of course, a certain amount that must be reckoned on for heating the mains, dryer drums, etc., regardless of the production. There is also to be considered the credit to be allowed, if any, for the heat units returned to the hot-well in the condensate. If the machines are engine-driven the power used by the drives and that used for drying must be considered; if electrically driven and bleeder steam is used, a fair division must be made between the units consumed in the turbine and that used in the process. All of these are engineering problems and must be decided on the spot in the particular mill. It is important when the actual steam usages are compared with the standard that unusual conditions as regards excessive use be forcibly brought out and called to the attention of the management so that steps may be taken to correct them. The standard here should be a real working standard and a constant help in the control of steam.

Repairs—Repair materials are estimated in the same manner as supplies, with the exception that any known special conditions for a given year should be taken into consideration. For example, on a paper machine the repair materials for a certain year might be high but a new set of table rolls were added that year. As this is not likely to occur the following year the fact should be considered in setting the standard. Or it might be that it is known that some large item must be undertaken the following year which should be allowed for.

Estimating repair labor may be gone about in the same manner. Generally speaking, except for unusual items, repairs run on about the same year after year, the law of averages prevailing. This, however, is also subject to the same condition as regards setting standards and a mere average may be inadequate.

Some accountants do not care to split up repairs into their component parts of labor and materials but prefer to use a total sum. This is particularly the case where a considerable part of the repair work is done by outside forces. They argue that the repair may be done entirely in the mill and the cost consist mainly of labor, whereas if done outside the cost might be the same and be chiefly material; a large part of what was labor for the mill being included in the cost of more finished parts bought outside. The point is a good one and it depends upon the extent to which repairs are done by the mill force as to which is the better policy. If the mill does nearly all of its own repairing it is easier in setting standards to divide it up.

The distinction between what is repair material and what is supply is often vexing. In fact the same thing may often be both. Take lumber. In most cases it is used for repairs but in the box plant it is certainly a supply. To facilitate accounting, the usual way is to make an arbitrary division among the various items handled by the storeroom, classifying all of one sort as supplies and all of another sort as repair material regardless of their actual uses. This makes for some obviously incorrect statements, but has the great advantage of simplicity and uniformity. If for every item the user had to mark it "supply" or "repair", there would be a great diversity of judgment involved—what one man would call supply another might term repair, etc., and the net result would probably be as incorrect as any.

It may be asked why such a distinction should be made and why it would not be better to confine repairs to merely repair labor, terming all issues by the storeroom as supplies. It is a decided advantage to know so far as possible the total cost of repairs; it shows the cost of maintenance; it gives the relative cost of using one type of machine as against another; it gives a line on the useful life of a machine, when it is becoming too expensive to run and it brings out the relative cost of mill versus outside repairs. While the distinction may seem rather farfetched at times, if properly used it may prove of decided advantage as a control and in reducing expenses.

Generally speaking a repair material is one that

remains more or less permanently in the machine or department, whereas a supply item is one that is regularly used in connection with the making of the product. Thus pipe fittings and the like would be repair items, while wrappers, lubricants, etc., are supplies.

Basis for Standards

Mention has been made of the fact that standards of expense should be set on the basis of full normal operation. This again calls for the exercise of considerable judgment. It should be the object of a standard cost system to develop "Normal Costs" or what the cost would be under normal operations. According to what is termed "Normal" will depend to a great extent the final costs—the higher the rate taken, the lower the resulting costs.

Three bases may be considered on which to set the standards of expenses and operations, namely:

(1) Theoretical capacity. The maximum that may be had.

(2) Practical capacity. This is the theoretical less normal allowances for time losses for repairs, holidays, etc.

(3) Budgeted capacity. What may be expected under present business conditions.

The first basis is seldom used. It is difficult to believe that a mill will regularly run up to its maximum.

The second method is more frequently used and many arguments are made for it. It is stated that any loss due to lower production is a direct loss resulting from poor business and not a cost of manufacture itself. It gives a measure of efficiency of operations and sets costs at what would be fair if a sufficient volume of sales could be secured. It therefore sets a goal both for sales and operating costs.

The third method also has many defenders. C. O. Wellington at a luncheon of the Cost Association of the Paper Industry two years ago, described how a certain mill made a profit during the deflation years of 1921-1922 by budgeting their costs on what they expected to make and holding the selling price to make a profit on such costs. In an industry such as ours where there is normally a 20 per cent overcapacity it is very questionable as to whether there is any advantage in taking 100 per cent capacity as normal and setting prices accordingly, only to charge off the excess 20 per cent to profit and loss. Of course this has eventually to be absorbed in the price, whether as a mill cost or as an extra charge and the question is where is the best place to put it.

One great drawback to using budgeted production as standards is that they vary from year to year thereby destroying the comparisons for different periods. Where the same practical capacity is used comparisons as to relative efficiencies, etc., are made much more easily. This, however, may be taken care of by the use of fixed standards and trends as will be described later, and is, therefore, less important. On the whole it seems to us that the budgeted basis is the most practical one for our industry for the purpose of controlling current costs, for the more closely the standards may be set to compare with the actual conditions, so that a direct comparison is made with actual results, the more simple it is and the better current control is effected. For long trends we can use fixed standards.

(To be continued)

"I Made It Myself"

MOST of us enjoy inventing and making things. We like to "putter around." We like to point at a good-looking device and say, "I made it myself."

Like keeping one's own garden, walking five miles a day for exercise instead of riding in the car, and helping the wife with the dishes, there is a certain relaxation obtainable from making things.

But, as a matter of business it is possible to carry the made-it-myself habit too far. Many men do carry it much too far.

A number of years ago a good friend of mine made his own automobile. That is, he bought parts here and there, put them together, and thought he had a better car than anybody else. But it cost much more than a standard car would have cost and I am sure it was no better than many standard cars that were then on the market.

Not long ago I was much amused by a well-meaning engineer who had made his own feed water regulator. He called it "automatic," but in reality it was hardly semi-automatic. It was absolutely undependable and had to be nursed as carefully as is necessary when boilers are equipped with no regulator at all. He "thought" he had saved the owner a couple of hundred dollars, but as a matter of fact the time required to make the device and the material used in making it were an absolute loss to the owner. Nothing was gained by using the device. It would have been less expensive and better all around had the engineer put in a requisition for a REAL feed water regulator, installed it, and the feed water problem would have been off his mind. He could then use his time to better advantage elsewhere.

There are very few things today, if any at all, that are better when "home made" than when made by a manufacturer who is tooled to do the work quickly, inexpensively, and well. Belt dressings, oiling devices, pressure regulators, damper regulators, paints, gaskets, boiler compounds, etc.—it is better to leave the making of such things in the hands of the manufacturers who specialize in them.—Schaphorst.

Current Thought by William Sibley

Primary Purposes of Industrial Suggestion Systems

AS I remarked in my book on Suggestion Systems, now copyrighted by the Morton Manufacturing Company—Broadly speaking, the objects of a suggestion system are five-fold, and may be itemized as follows:

1—To generate ideas;
2—To stimulate interest of workers;
3—To develop loyalty and stability;
4—To reduce waste and improve quality;
5—To reduce accidents.

Creating the desire to produce more, waste less, and employ greater safety, is the one unending task of every management. Industrial relations engineers are of one mind that compensation alone, regardless of amount, is not sufficient in itself to create that desire. **Without inherent, natural interest in the work to be done or the problem to be solved, all effort to stimulate desire on the part of the employee will be of little avail. But convince such an employee that his ideas will be recognized and rewarded according to their worth and his interest in all phases of activity will be quickened and his desire to work, save and remain safe, stimulated.**

Once the interest of the worker has been aroused, he immediately feels himself a definite, integral part of his organization—not merely a name or a number. Through his suggestions, born of increased interest in his work, he makes himself heard—proves to himself that the management is not the cold-blooded, distant organization he might have thought, but rather a set of considerate men who know of his existence and daily effort. Not being "lost" or "sidetracked" but a recognized part of his company, his loyalty to both management and organization increases correspondingly. And **with increased loyalty**, the less likely he will be to "throw up his job" to search for greener fields. **Increased stability** is therefore a result of suggestion systems—and labor turnover is an item of expense far higher than is frequently supposed.

With interest increased and loyalty developed, it is but natural for men in every capacity to consider intolerable any visible waste of material, time or effort. Develop the loyalty of the worker and let him feel himself an integral part of a definite organization and you will have gone far toward waste elimination. Particularly is this true when the suggestion system openly rewards ideas on waste reduction or reclamation,—when financial gain is the incentive for such effort.

Perhaps one of the greatest benefits to be derived through a suggestion system is the reduction in accident hazards it will effect. Industrial accidents, as every employer well knows, are exceedingly costly to not only the men involved but to the management. Indeed, the incidental costs attendant with industrial accidents are frequently three or four times the bare cost of "compensation." To reduce accidents is therefore a financial as well as moral obligation devolving upon every management. No better way to attain such reduction has been devised than the System of Suggestions, since such systems gather in the ideas of those best fitted to make suggestions—the men on the job.

Certainly the use of posters and placards, placed conspicuously, does a certain amount of good in that they serve to caution, constantly the employees against danger and the folly of "taking a chance," but with the suggestion system the employee finds his voice and with first hand knowledge of the places where and the kinds and types of dangers to be encountered, he is able to warn the management and to prescribe ways and means of eliminating the primary sources of danger. And it is truly said that "A stitch in time saves nine."

Concretely, a few of the results to be gained through the inaugeration and proper maintenance of a suggestion system may be listed as follows:

1—Excites the interest of workers;
2—Creates the desire to produce more, waste less and exercise greater safety;

3—Develops loyalty to employer and organization;

4—Improves relations between management and men;

5—Reduces labor turnover;

6—Improves quality of both workmanship and product;

7—Reduces accident and fire hazards;

8—Effects reduction in operating expenses;

9—Reveals capabilities justifying recognition and promotion.

Comment might be made on point nine by saying that the encouragement of an employee to think in terms of management (which he must do to make a suggestion) is in itself excellent training for positions of higher responsibility. Any firm whose policy it is to fill vacancies in higher positions from the ranks will find a properly installed suggestion system not only a stimulus and training medium but a guide to eligibility for advancement. Indeed, what more appreciated reward could there be than a promotion? As B. C. Forbes has put it: "A $100 or a $500 prize might be ever so cordially welcomed, but its value is little in comparison with promotion to a job paying more money and carrying increased responsibility." Evidence of the truth of this is found in scores of organizations, such as the National Cash Register Company, the Eastman Kodak Company or the H. H. Franklin Manufacturing Company, where scores of men have been promoted because their eligibility was revealed through suggestions made.

A Few Results

There is abundant evidence that properly operated suggestion systems are proving one of the most valuable means for saving money for employers and for winning recognition by employees.

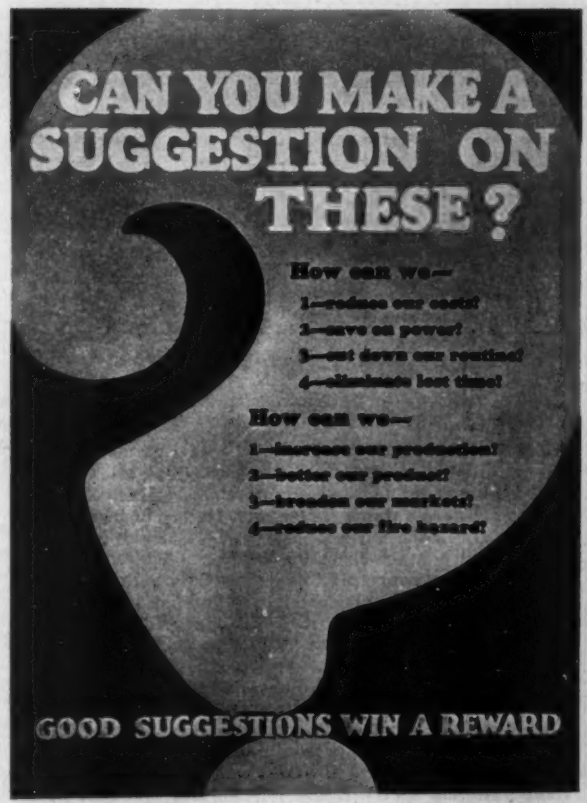
At Mead Pulp and Paper Company, the diminished rate in its accident record alone more than justifies the installation and maintenance of their suggestion system; to say nothing of the increased interest among emloyees, reduced operating expenses, improved methods, and other results.

Executives of Bird and Son (paper manufacturers) attributed to their suggestion system greater co-operation between management and men, increased safety and better working conditions; while Toy Tinkers, Inc. (who limit the function of their suggestion system to inventions or improvements to product), have developed three highly profitable toys from employee suggestions and have found that their system of rewards taps an almost limitless field for ideas that may be capitalized to the advantage of both corporation and individual.

According to officials of Lincoln Electric Company, the conduit box they now use and which they consider superior to all other types, was evolved through the combination of the best features contained in several suggestions received from their workmen.

The suggestion boxes put in the plant of the National Cash Register Company, nearly a generation ago, have brought many of the improvements and refinements made to cash registers during the past several years, while the layout of a whole packing platform at the plant of Lee & Cody (wholesale grocers) was changed through the suggestion of a young man in the shipping department—with large economy as the result.

At the Alamo Iron Works, better tools and better tool holders have been devised which not only have given a better product at less expense but much of what was formerly waste has been saved or reclaimed—all made possible through their suggestion system.



One of the best ways to stimulate suggestions from employees is to direct their suggestion thought by asking definite questions. Such questions can be on any phase of production or operation, and may usually be accompanied by a time-limit for suggestions on that particular subject, such as one week, two weeks, or one month.. The above reproduction is of a poster (copyrighted by Morton) which has proved successful in directing employee's suggestion thought along certain lines.

Such concrete results might be listed almost without end, many of which would be more outstanding in aggregate value, but these few will serve to indicate the reason why 37½ per cent of all industrial plants and factories in the United States are operating suggestion systems in some form.

The Paper Industry 1929 Safety Contest

February Scores

24 Mills "Make the Grade"

PERFECT SCORES

	PARTICIPANT	MILL	LOCATION
GROUP A	International Paper Co.	Otis	Chisholm, Me.
	Kimberly-Clark Corp.	Falls	Niagara Falls, N.Y.
GROUP B	Brown Paper Mill Co., Inc.	Monroe	Louisiana
	International Paper Co.	Pierrefield	New York
GROUP C	Sorg-Oglesby-Smith Paper Co.	Oglesby	Middletown, Ohio
	American Writing Paper Co.	Riverside	Holyoke, Mass.
	Bergstrom Paper Co.	Neenah	Wisconsin
	Adams Bag Co.	Chagrin Falls	Ohio
	Marinette & Menominee Paper Co.	Menominee	Michigan
	Lowe Paper Co.	Ridgefield	New Jersey
	Bird & Son, Inc.	Phillipsdale	Rhode Island
	Gardner & Harvey Co.	No. 2	Middletown, Ohio
	American Writing Paper Co.	Windsor	Holyoke, Mass.
	International Paper Co.	Webster	Orono, Me.
	International Paper Co.	Livermore Falls	Maine
	Kimberly-Clark Corp.	Neenah	Wisconsin
	Warren Manufacturing Co.	Hughesville	Riegelsville, N.J.
	International Paper Co.	Winnipiseogee	Franklin, N.H.
	Container Corp. of America	Mid-West Div.	Kokomo, Ind.
	American Writing Paper Co.	Platner-Porter	Holyoke, Mass.
	Warren Manufacturing Co.	Riegelsville	New Jersey
	Lincoln Pulp & Paper Co. Ltd.	Lincoln	Merritton, Ont., Can.
	Sorg-Oglesby-Smith Paper Co.	Smith	Middletown, Ohio
	International Paper Co.	Riley	Maine

IMPERFECT SCORES

GROUP A				GROUP B				GROUP C			
		Points				Points				Points	
KEY	Rank	Credit	Debit	KEY	Rank	Credit	Debit	Key	Rank	Credit	Debit
A- 5	3	547.365		B-24	3	494.385		C-24	21	438.815	
A-11	4	518.565		B- 6	4	478.815		C-17	22	402.935	
A- 9	5	474.535		B-35	5	441.450		C-25	23	373.035	
A-19	6	450.535		B-11	6	435.285		C-27	24	303.960	
A-29	7	448.800		B-31	7	431.315		C-32	25	301.885	
A-14	8	434.630		B-12	8	382.650		C-48	26	210.100	
A- 8	9	427.650		B-25	9	378.985		C-52	27	195.715	
A-16	10	424.545		B-15	10	329.300		C-15	28	115.865	
A-17	11	412.400		B- 9	11	278.285		C-29	29	75.115	
A-23	12	376.935		B-18	12	232.615		C-36	30	63.215	
A- 4	13	355.685		B- 4	13	224.685		C- 2	31	24.465	
A- 6	14	347.515		B-22	14	223.960		C-46	32	23.665	
A-25	15	298.900		B-13	15	160.535		C- 1	33		16.100
A-12	16	283.035		B-34	16	103.515		C-41	34		19.400
A- 3	17	263.765		B-17	17	93.555		C-57	35		86.615
A-15	18	157.365		B-21	18	55.565		C-39	36		105.035
A-28	19	144.700		B-16	19		25.685	C-47	37		200.650
A-27	20		67.185	B-26	20		82.100	C- 8	38		207.165
A-13	21		67.215	B-33	21		195.050	C- 3	39		267.985
A- 1	22		86.650	B-33	22		214.365	C-20	40		251.165
A-24	23		109.415	B-27	23		247.935	C-23	41		292.235
A-26	24		161.015	B-20	24		328.165	C-11	42		296.415
A- 7	25		172.550	B-28	25		398.935	C-28	43		335.150
A-10	26		199.235	B- 1	26		428.435	C-56	44		377.735
A-22	27		836.235	B- 3	27		441.315	C- 6	45		556.285
				B-29	28		449.835	C- 5	46		755.135
				B-37	29		475.685	C- 7	47		779.065
				B-30	30		633.485	C-31	48		1075.265
				B-36	31		665.265	C-50	49		1183.135
				B- 2	32		1047.565	C-58	50		1244.535
				B- 7	33		1172.450	C-21	51		1257.600
				B-10	34		1719.965	C-37	52		1622.835
								C-10	53		2015.200
								C-51	54		2268.635
								C-55	55		2437.100
								C-30	56		4494.850

Reports Outstanding: A-2, A-20, B-5, B-32, C-9, C-45

Universal Safety Series

Prominent Speakers to Address Radio Audience

UNIVERSAL safety will soon be carried directly into millions of American homes, through a series of thirteen weekly radio addresses by national leaders. Alarmed by the accident fatality toll which claims nearly 100,000 lives yearly in the United States, the National Broadcasting Company in co-operation with the National Safety Council will present this "Universal Safety Series" in an effort to awaken the American people from an attitude of seeming indifference toward a national problem of vital importance.

The following speakers are announced: Charles M. Schwab, Chairman of the Board, Bethlehem Steel Company, Bethlehem, Pa., "Safety as a Factor in Industry"; Hon. Robert P. Lamont, Secretary of Commerce, "Safety as a National Problem"; Hon. James J. Davis, Secretary of Labor, "Safety and the Worker"; Madam Schumann-Heink, "Safety in the Home"; Dr. Miller McClintock, Director Albert Russell Erskine Bureau of Street Traffic Research, Harvard University, "Making Our Highways Safe"; Grover Whalen, Commissioner of Police, New York, "Enforcement as an Aid to Safety"; Joseph E. Sheedy, executive vice president, United States lines, "Safety on the High Seas"; P. R. Crowley, president New York Central lines, "The Railroads and Safety".

President Henry A. Reninger of the National Safety Council will outline the series and introduce Mr. Schwab, the first speaker, on Saturday evening, April 20, at 7:00 p. m. The other twelve talks to be given on successive Saturday evenings will go on the air at 7:15 and will be of fifteen minutes' duration. All talks will be given on eastern standard time schedules. All speakers, with the exception of the two cabinet members, will talk from the New York N.B.C. studios. Messrs. Lamont and Davis will speak from Washington.

Approximately thirty stations of the National Broadcasting Company red network, including four of the largest Pacific coast stations, have already signified their intention of participating. At least ten others will join if rearrangement of present schedules will permit.

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of February 28, 1929

Participant	Mill	Rate	Participant	Mill	Rate
Kimberly-Clark Co.	Neenah	0	Bergstrom Paper Co.	Neenah	.332
International Paper Co.	Riley	0	Union Bag & Paper Corp.	No. 5	.340
United States Gypsum Co.	Gypsum	.003	Gardner & Harvey Co.	No. 1	.419
International Paper Co.	Webster	.140	Kimberly-Clark Co.	Atlas	.476
Upson Co.	Board	.142	Lincoln Pulp & Paper Co.	Lybster	.501
Gardner & Harvey Co.	No. 3	.182	Union Bag & Paper Corp.	Allen	.616
Adams Bag Co.	Chagrin Falls	.154	Lincoln Pulp & Paper Co.	Lincoln	.575
Gardner & Harvey Co.	No. 2	.263	Union Bag & Paper Corp.	Fenimore	1.724
International Paper Co.	Winnipiseogee	.301	Northwest Paper Co.	Brainerd	1.965
			Lincoln Pulp & Paper Co.	Sulphite	2.312

Group A- Nekoosa-Edwards Paper Co., Combined Mills .478

Group B- International Paper Co., Niagara Falls .412

"The Universal Safety Series gives every promise of being the most significant and effective program of accident prevention that has ever been carried out in America," says President Henry A. Reninger of the National Safety Council. "The National Broadcasting Company is voluntarily throwing its vast broadcasting resources into the very worthy cause.

"We have long since learned that most accidents would not happen if people would only pause to think. The underlying purpose of this new service for the radio is simply to plant the seed of safety thought in the mind of the individual citizen. I have no hesitancy in predicting that the series will result in a very definite reduction in the national accident toll for 1929."

Within a few days the other six speakers will be announced and the definite date schedules will be published. The subjects will include "Death Through Accidents;" "Safety in the Air;" "Education—the Part it Plays in Safety;" "The Railroads and Safety;" "The Automobile and Safety;" and a general summary to be given on the evening of July 13. All of those invited to participate are of outstanding prominence in American life.

Seventh Mid-West Safety Conference

Safety Leaders Discuss Education as Important Factor in Fire and Accident Prevention

SAFETY education in all of its aspects was presented to a large number of safety and industrial workers at the Seventh Annual Mid-West Safety Conference which was held at the Stevens Hotel, Chicago, Tuesday, March 20, 1929.

The general session at 9:30 Tuesday morning was attended by about 350 members of the different sections. Profound interest was manifested and the earnest messages of the speakers left with all present a greater desire for vigilance, and impressed the vital importance of the thought voiced by one speaker, the practice of safety in each home.

The Fire Hazard

The first speaker of the general session was Harry Rogers of the Western Actuarial Bureau, Chicago, whose subject was "Facts Written With Flame". Mr. Rogers is a forceful, convincing speaker and he gave a most vivid recital of scenes that he had witnessed while a fire chief. He made the assertion that there existed in every home of any size from five to twenty-five fire hazards. His work in the interest of fire prevention is well known, as he delivers lectures in principal cities before civic organizations, and also appears in clown costume at many of the public schools with a lecture to the children. Thus he has gained the sobriquet, "Smoky the Clown". The speaker cited the fact that the United States yearly suffers a loss of one billion dollars in fire waste, and made it plain that each individual pays his part of this loss; everything enjoyed and everything purchased is taxed with its percentage of overhead for insurance.

In the discussion which followed Mr. Rogers' address, a very interesting statement was given out which permeated the remainder of the session—that fire prevention is not a science, it is just common sense.

The Foreman and Safety

Speaking on this subject, Garrett Burgess of the United States Rubber Co., Detroit, Mich., gave due credit to the work of organized safety. The speaker believed, however, that no safety plan, no matter how efficiently carried out will always meet the demand of the emergency. He emphatically presented another phase of the question—the training of the human mind. The worker must be trained to think, and when, as far as possible, the weakness of the human element has been overcome, a large responsibility for accidents has been eliminated. The foreman must have the confidence of the men under his supervision and realize that every man has his part in the prevention of accidents. Educate the men to think, to concentrate. 139 men each day are killed in industrial plants. The foreman should feel a sense of his responsibility.

The Health of Industrial Workers

Some very interesting comparisons were given by Dr. C. O. Sabbington, Industrial Health Department of the National Safety Council, Chicago, who spoke on this subject, and illustrated his remarks with slides showing health statistics of employees in a large number of industrial plants. It was plainly brought out that looking after the health of the worker is an important element of safety, since a healthy employee is, of course, more normal and less subject to carelessness resulting in accidents. Why has more attention been given to machines than men? Production depends upon continuity of employment, and this is dependent upon physical efficiency, which is a state of health. Therefore, production is dependent upon the health of the human units of the plant.

During the afternoon sectional meetings were held, each being well attended and offering instructive and helpful programs.

Welfare and Illfare Subject at Dinner Meeting

The dinner meeting in the Grand Ballroom of the hotel proved a delightful climax to the gatherings of the day. Over nine hundred attended the banquet which was presided over by Paul Van Cleef, Chairman of the Board of Directors of the Chicago Safety Council. The speaker of the evening, the Honorable Rodney H. Brandon, Director of Public Welfare for the State of Illinois, addressed the assemblage on the subject, "Welfare and Illfare". The word illfare, has been used by him to portray his conception of his task as Director of Public Welfare of the State—to survey the seven and more million people in the State, study the status of their living and to endeavor to discover the illfare existing among them; to measure the instrumentalities for welfare which have been created to offset those contingencies for illfare, and to lend the aid of the entire State of Illinois in supporting and backing up those instrumentalities for welfare, whether state, municipal, semi-public, or private, which have been created to solve those problems.

Mr. Brandon covered the three groups of accidents—industrial, public and home. He brought out the thought that corporations are keenly interested in the prevention of accidents not only from a sentimental viewpoint, but from a business viewpoint as well. The foreman who is able to make the best record in his shop with his help for the actual prevention of accidents, is the foreman whose work will be appreciatd over and above all others of equal efficiency. Large companies desire safety efficiency because they have found it expensive to have accidents. During the last decade the number of public accidents has increased alarmingly, due principally to the general use of the automobile. It was brought out that there is now a measure before the General Assembly which has been adopted in many states, providing for the proper regulation and licensing of automobile operators. Speaking on safety in the home, Mr. Brandon stressed the importance of educating the American people to understand the value of safeguarding the appurtenances and tools which are used in most every home.

In conclusion, the speaker asserted the only thing perhaps which will save America from a campaign for enforced insurance and some sort of Government supervision, forcing economic protection for the families which are the victims of sickness and accident, will be foresight in doing two things:

First, in driving safety organizations into such a degree of efficiency that industrial accidents will be reduced to the absolute minimum.

Second, by such support of voluntary free mutual protective agencies, that the number of children whose lives are ruined because of the economic losses sustained through the sickness or accident of their fathers will be reduced to an absolute minimum.

On the one hand is welfare, and on the other hand illfare. This is the instrumentality which is responsible for the reduction to a minimum of the contingency of accidents among the people of the State of Illinois and the Midwest.

The Joint Committee on Approved Pulp Testing Chemists for the Paper Industry has announced the acceptance of Elmer S. Hinman, of the P. H. Glatfelter Company, Spring Grove, Pa., as an approved mill pulp testing chemist, effective April 2.

Penna.-New Jersey Supers Meet

Well Attended and Enjoyable Gathering at Wilmington, Del.

INTEREST in the meetings of the Pennsylvania-New Jersey Division of the American Pulp and Paper Mill Superintendents' Association continues to grow under the direction of an enthusiastic group of officers and committees. The meeting at Wilmington, Del., on Saturday, April 6, was attended by 142 persons who enjoyed every minute of their stay in a city that is renowned among papermakers as the home of the Pusey and Jones Corporation and the Augustine mills of The Jessup and Moore Paper Company.

A meeting of divisional officers and committees was scheduled for Friday evening, April 5, and members began to arrive early on Friday, nearly seventy-five having registered before 9 o'clock in the evening. Joseph E. Plumstead, general manager of the Jessup and Moore Paper Company, entertained a number of the visiting committeemen at dinner, when arrangements were made to form a party for the national convention in Wausau, Wis., June 6, 7, and 8.

After a visit of inspection to the plant of the Pusey and Jones Corporation, where mammoth dryer drum castings and steel press rolls were seen in the process of manufacture into the finished articles, the party was taken in motor cars to the Augustine mill of the Jessup & Moore Paper Company where a new book paper machine of Puseyjones design was seen functioning smoothly and efficiently. The fourdrinier part of this machine is 168 inches wide and carries a wire 70 ft. long and 166 inches wide. The stuff flows from the head box through a Voith stock inlet and instead of the customary rubber deckle straps, the Wentz No-Deckle device is used. At the dry end are two stacks of Lobdell Car Wheel Company chilled iron calenders and a great Cameron Machine Company slitter and winder driven by its own independent motor. The dryer inlet and outlet piping are of Fulton Engineering Company design.

Arrangements for Travel to Wausau

At the luncheon, Chairman J. E. Blosser introduced a representative of the Pennsylvania Railroad who described some of the plants that had been made to form a party, with the use of special pullmans, from Philadelphia, New York, and Boston. An effort is being made to arrange for a special train leaving Philadelphia over the Pennsylvania R. R. on Tuesday, June 4, at 3:05 P. M., which is scheduled to arrive in Wausau, Wis., at 8:18 P. M., on Wednesday, June 5.

The statement of the railroad agent was supplemented by James G. Ramsey, former chairman of the division, who urged upon all who intend to make the trip to Wausau to insist on getting either a certificate or a receipt from the railroad agent when purchasing a full fare ticket to destination, as this certificate will enable the holder to obtain a reduction of one-third fare on the return trip. For Philadelphia passengers this means a saving of $20, and for those who entrain at Boston, $25.

An Educational Session

Following the luncheon an educational session was held at which the following program of papers was presented;

Fourdrinier Wires in the Making, by R. N. Watts, of the Cheney Bigelow Wire Works.

Grinding and Crowning of Paper Machine Rolls, by Joseph Stuart, vice-president of the Lobdell Car Wheel Company.

Recording Instruments and Their Use in the Paper Mill, by J. H. Ferguson, of the Bristol Company.

Autogeneous Metal Coating, by G. L. Coppage, Pusey and Jones Corporation.

Fourdrinier Wires in the Making

A series of motion pictures was used by R. N. Watts, of the Cheney Bigelow Wire Works, Springfield, Mass., to tell the interesting story of "Fourdrinier Wires in the Making". He prefaced the pictures with a short talk descriptive of the firm and its products. Since 1842, a period of eighty-seven years, the Cheney Bigelow Wire Works has engaged in the manufacture of cylinder molds, dandy rolls, brass, bronze and monel wire cloth, as well as fourdrinier wires. Papermakers have always been welcomed at the plant where experienced men are assigned to explain to visitors the process of wire manufacture, it being assumed that if it was educational for the wire manufacturer to know much of papermaking, it would be equally well for the papermaker to know the details of wire manufacture.

Details of Wire Manufacture—The first film showed the crude wire as it reaches the wire works from the rolling mill. Following this was shown the process of drawing to finished sizes through diamond dies. Charcoal annealing, which has long been a Cheney Bigelow Wire Works feature, was then seen in process, followed by the beating and drying of the wire previous to its transfer to the winding room. In the winding room it was shown on spools or bobbins ready to be calipered for size before being sent to the looms for making wire cloth. The looms were shown in operation, followed by the sewing of the finished wire, stretching, inspection and boxing operations which make the wire ready for shipment to the paper mill.

In connection with the moving picture scenes an exhibit was made of the various utensils used in manufacture, as well as samples of finished wire cloth.

Grinding and Crowning Paper Machine Rolls

The paper by Joseph Stuart, vice president and general superintendent of Lobdell Car Wheel Company, Wilmington, Del., discussed the installation of roll grinders in paper mills. Important among the equipment that must be kept in the best possible condition are press and calender rolls. He said that the question of location was important in any decision to instal a grinder. It should be so situated as to be free from vibration caused by other machinery, for no matter how good the machine might be or what wheels were used, it was difficult to produce well ground rolls if the grinder is exposed to outside vibration. The foundation should also receive careful attention and be built of the best material and according to the instructions of the builder of the machine.

Selection of Operator—The training of an operator for a roll grinder is a simpler matter today than it was formerly. The man selected need not necessarily be a skilled mechanic, but should be a good handy man with plenty of patience, a willingness to follow instructions and intelligence enough to ferret out the trouble when his wheels do not just work right. The modern grinder, with its improved method of producing accurate work and its automatic crowning feature, together with special calipers registering fractions of a thousand of an inch, does not require the services of a highly trained operator.

Mr. Stuart said it was important to select grinding wheels of the right grade and grit. Although more expensive it was best to have extra arbors mounted with wheels capable of grinding the material in the rolls to be ground. The chilled rolls of the calender stack are hardest to grind and wheels suitable for them will also give good results on rubber or brass. No advantage was to be gained by the use of a coarse grain or grit wheel in treating chilled rolls, as a 60-grain wheel will grind just as fast as a coarser grain and at the same time give the right finish without the necessity of changing to a finer wheel. The grade of hardness of the wheel should not exceed 1½. A wheel which gives a glaze will not grind chilled rolls. If the wheel shows a metallic glaze while shut down after grinding, it is an indication that it is too hard and will only heat the roll without grinding it. A rough and ready test of the hardness of the wheel made by

rubbing the thumb over the face of it was mentioned. If the grain does not rub out, it is a sign that it is too hard for grinding chilled rolls. Wheels should be examined for hardness as about 95 per cent of the troubles experienced with them come from hardness.

Wet Grinding—In reference to rubber-covered rolls, Mr. Stuart said that these are usually ground dry, though if the rubber is hard it is more desirable to grind them wet, in the same way as metal and stone rolls are ground. Water containing enough sal soda to make it slippery to the feel and prevent the iron rolls from rusting give it best results. If sal soda is not available, caustic soda will answer the purpose.

Rolls should be ground accurately. With a modern roll grinder in proper condition, it is easily possible to make straight rolls cylindrical and parallel within one quarter of one thousandth of an inch, and crowned rolls within the same limit. Roll calipers are not graduated as a rule to less than one thousandths, but with the dial type it is easy to detect one-fourth of this.

What Roll Crowning Means—Mr. Stuart gave an explanation of what was meant by the crowning of a roll. The crown was formerly designated either by difference in diameter or difference in circumference, but since roll calipers have come into use giving micrometer measurements the crown is designated as the difference in diameter between the center and the ends. The end measurements are not taken at the extreme edge of the face of the roll but at two inches therefrom.

Crowning Press Rolls—The crowning of press rolls varies considerably even on rolls of the same size, the density of the rubber, the kind of paper made, the amount of pressure the speed of the machine and the ideas of the particular superintendent all playing a part in the variations. It is therefore the duty of the superintendent to specify the kind of crown desired on a press roll and it is then up to the grinding machine and the operator to turn out the right amount of crown and desired shape. Certain formulas have been developed to determine the shape of a crowned roll and these can be obtained from the Lobdell Car Wheel Company on request.

Determining the Shape—In determining the shape, the center of the face of the roll is found. The space between this and two inches from either end is then divided into four equal parts. The measurements at the three intermediate points, starting at the points next to the center should be 1/16, ¼ and 9/16 inches respectively of the total crown or end measurement. He said that the shape of the crown was very important, fully as important as the amount, for if the shape is correct considerable variation in weights may be carried without springing the rolls apart. If, however, the crown is irregular, a high spot will act as a fulcrum and cause the weight to spring the roll. This would, of course, show more clearly on calender rolls than on press rolls.

Details of Crowning—Mr. Stuart said that the grinding and crowning of calender rolls should be the most accurately performed work about the paper machine. The bottom and top rolls only should be crowned, and all the others left perfectly straight. It was at one time the custom to crown only the bottom roll, but more recently the top roll has also been given a crown, depending on what is required of the stack. A mill for which the Lobdell Car Wheel Company do grinding had an order for very hard paper on which a high machine finish was desired and so they had the top roll finished with an excessive crown which enabled the paper manufacturer to carry more weights on the calender without taking out the bottom roll. After the order was completed the extra crown was ground off.

Practical Pointers—Some practical pointers were given on the grinding of a calender stack. In grinding or regrinding a set of rolls of this kind, the Lobdell Car Wheel Company sets the stack up in test housings, weighting the top journals with the pressure the stack is intended to carry and then test the joints by passing an electric light along each joint from end to end. If any light shows through, the rolls showing it are reground and tested until all joints are dark. A crown which might be correct when all rolls were in use and normal weights are carried would not be correct with more or no weights, or with some of the rolls hung up and unused. In the face of varying conditions of this kind, Mr. Stuart said it would be best to effect a compromise by making the crown of the bottom roll correct to carry all the rolls of the stack and to make allowance for variation in weighting in the crown of the top roll.

Frequently, when the calender stack fails to work properly the cause is attributed to faulty grinding of the roll when the trouble may be somewhere else. Thus irregular heating may cause expansion of the iron; a difference of 10 deg. in the temperature of a fair-sized stack may make a total difference of .009" to .009" in the diameters of the rolls. Mr. Stuart explained that if the ends are 10 deg. warmer than the middle there will be a total expansion on all the rolls of from .008" to .009", equivalent to a reduction of the crown on the bottom roll by a corresponding amount, and if the centers are 10 deg. warmer than the ends the crown will be increased correspondingly.

The Use of Recorders in Beating

The paper on "Recording Instruments and Their Use in the Paper Mills," by J. H. Ferguson, of The Bristol Company, was confined to a discussion of the application of recorders on washers, beaters, jordans and the paper machines, though he gave a list of applications, types of instruments and their advantages in other mill operations as well as in the wood-using industries generally.

The pulp beater recorder described was used to control beating because it recorded the length of the beating period and the various positions of the roll with respect to the bed plate during the operation; the pen moving out on the chart as the roll is progressively lowered toward the bed plate. The graduations on the chart are directly proportioned to the clearness between the roll and the bed plate.

Beating by Chart—Mr. Ferguson said that a standard method of beating various grades of stock had been worked out in some mills from a study of the charts. The operator is instructed to start beating by dropping the roll until the pen of the recorder is on a certain predetermined graduation on the chart. After holding the roll in this position for a certain time, the roll is then dropped until the pen is on another predetermined graduation, and so on until the beating operation has been completed. In some mills upwards of 95 per cent of beating is done with the aid of the recorder chart. However, Mr. Ferguson said he did not want to convey the idea that beating could be conducted entirely by charts. In one large mill, the rag stock is beaten for about twenty-two hours, and with the exception of the last hour the position of the roll is set according to a predetermined diagram. During the last hour, the operator is supposed to use his discretion in handling the rolls so as to take care of any slight variation in the grade of the stock.

Other Uses for Beater Recorders—The beater recorder is also used to show the elapsed time between the beats, an important matter when a mill has limited beater capacity. The beater recorder serves as a check on operations. Beater operators, especially those on the night shifts, were apt, he said, to drop the roll down hard during the first few hours and then, later in the night after they were certain that the superintendent would not likely drop in on them, the roll would be lifted and the operator take it easy.

He gave directions for using the recorder. One plan was to set the recorder to read 30 when the roll was barely brushing the bed plate, records under 30 showing that the beater was not working, and above it indicating the extent which the roll was down on the bed plate. Another method was to drop the roll until it rested on the plate so that the shaft just starts to ride out of the bearings. The recorder is then set at 100, or the outside graduation of the chart. Readings of less than 100 would show the position of the roll.

Use of Recorders on Pulp Washers—It was necessary to check the settings occasionally. Some mills check after every beat; other check once a week. Should a test show the recorder setting to be off on account of wear, the thumbscrew on the lighter bar attachment must be loosened and the recorder reset. Mr. Ferguson mentioned installations of recorders on pulp washers which are now used in some mills for breaking up the stock preparatory to beating. The record

here is of importance to the superintendent because it gives him control over the length of the fiber going into the beater and makes for more uniform beating.

The beater recorder has been adapted for use on jordan to record the position of the plug. In mills where electric power is used to operate the washers, beaters and jordans, wattmeters were recommended.

Importance of the Tachometer—Referring to the recording and indicating tachometer used on paper machines, he said that this was one of the most important instruments in a paper mill. An electric tachometer consisting of a magneto and an indicating or recording voltmeter calibrated in r.p.m. was generally used. Mr. Ferguson elaborated on the connections of the magneto, as follows:

Connections of the Magneto—"The magneto is usually connected to the spring roll, although it may be connected to any other suitable roll or shaft. The indicating tachometer is generally located in the vicinity of the machine where the operator can observe the speed of the machine at all times, and a recording tachometer is located in the superintendent's office.

"The reason for connecting the magneto to the spring roll is that it shows, besides the speed of the machine, when a break occurs in the paper, and the duration of time the machine is out of operation. If the magneto were connected on any other roll, only the speed would be recorded.

"With the magneto on the spring roll the superintendent knows how many breaks in the paper occur, when they occur, and how long it takes to get the machine back in operation. These factors give a check on production. A record of the speed gives him a check on the uniformity of the paper that has been made."

Recording Thermometer—The use of a recording thermometer with a special type bulb to record the temperature of the various rolls was mentioned as another important instrument on the paper machine. If the temperature of the roll is known, each roll can be regulated accordingly and a correct drying temperature maintained, thus assuring a more uniform grade of paper and preventing case hardening, especially with paper board.

Spray Method of Metal Coating

The paper and demonstration of "Autogenous Metal Coating" by G. L. Coppage, manager of shops and foundries of the Pusey and Jones Corporation, was highly interesting. A remarkable stunt of coating the head of a match with copper without lighting the match attracted keen attention. Other demonstrations of the plating of wood, paper, glass and muslin with layers of copper and aluminum were also made.

Operation of the Sprayer—Mr. Coppage explained the construction and principle of operation of the metal sprayer. The sprayer or gun is connected to standard acetylene and oxygen cylinders, and to a supply of compressed air. This consumes while in use, approximately fifteen cubic feet each of the gases an hour, and fifty cubic feet a minute at fifty pounds pressure of the air. Metal in the form of standard gauge wire is mechanically pulled from a reel into the rear of the gear case and is fed uniformly and continuously at a rate of from twelve to twenty-four feet a minute to the muzzle of the short barrel, where it enters into a reducing flame zone developed from the gases and air, and is there melted and blown at a velocity of about 3,000 feet a second (equal to the speed of a rifle bullet) in a very fine spray on the surface to be coated.

The principle involved consists in keeping the melting rate exactly equal to the rate of feed. When the sprayer or gun is started the metal wire is gradually melted as it is fed in. The muzzle of the gun is aimed at the surface to be coated and held at a distance of three or four inches. The metal is thrown on in vapor form against the surface to be coated, but it is practically cold coating, because, while the temperature of the metal at the melting point rises many hundred degrees, when the metal is volatilized and mixed with air, it falls to about 70 deg. cent. and less, owing to the sudden increase in volume and air pressure. The temperature of the surface of the substance that is being coated is not appreciably raised. On account of the intense cooling of the volatilized metal it is possible to coat inflammable materials like muslin, paper, celluloid and the heads of matches with metal. The apparatus might be likened to a machine gun making its own ammunition from reeled wire and coating any surface by bombarding it with molecular particles of molten metal. Copper, bronze, German silver, aluminum, zinc, lead, tin, iron, nickel, monel metal and other alloys may be sprayed. The extremely minute particles of metal striking the surface to be metallized are again melted by the friction and are thereby welded to a homogeneous metal layer, the thickness of which can be varied from .000039 of an inch up to several inches, depending on the length of time the spray is permitted to act on the surface.

To Prevent Electrolysis—In coating certain metals to protect them from atmospheric corrosion, or the action of acids or moisture, the electrolytic theory of corrosion must be considered. Thus, if a copper coating is desired to protect iron or steel, the surface must first be coated with zinc, the most electropositive metal, and then with copper. In this way electrolysis will be prevented.

Protective Metals—Mr. Coppage explained that most metals corrode or oxidize progressively; but zinc, aluminum and lead do not and it is this property that constitutes their protective value. Iron and zinc are both attacked by moist air containing carbon dioxide, but while iron forms a loose, incoherent mass of rust, through which more moisture and air readily find a way and cause corrosion to proceed unchecked, it is different with zinc. On the latter a layer of salts is formed—zinc oxides and carbonates. This is tough and adherent and forms a protective surface which prevents the entrance of air and brings the corrosive action to a standstill, but should a defect in the surface develop, respraying will correct it. Aluminum coatings are effective where certain acid conditions exist. The metal coating applied by this spray process is readily machinable and can be turned and threaded but possesses little tensile strength or elasticity. On this account Mr. Coppage said he could not consider the process autogenous in a true sense. There was no fusion of particles, the metal being melted, atomized and impacted on the surface either in an adherent or separable form. The process was not therefore to be confounded with electric or acetylene welding.

Uses for Metal Spraying—Among the uses to which the process has been put, Mr. Coppage instanced the lead lining of wooden tanks, repairing acid defects in fiber dryers, coating hydraulic rams, as well as coating parts of ships and paper machinery to protect them from atmospheric corrosion. He said it had been found valuable for filling surface defects in castings but the success of the application was largely controlled by the preparation of surface and the skill of the operator.

Points of Discussion

Discussion of the various papers was led by Chairman Blosser. As there were no questions for discussion in connection with the motion picture exhibit of fourdrinier wire manufacture, the author was thanked for his presentation, but Mr. Blosser suggested the advisability of increased factory control of operations in the manufacture of fourdrinier wires.

A number of points were brought out in connection with the grinding and crowning of paper machine rolls. Most of those present agreed with Mr. Stuart in saying that the right amount of crown and desired shake depended on the requirements of the mill on a particular operation as well as on the ideas of the individual superintendent.

Chlorine Against Slime

Following the demonstration by Mr. Coppage of the spray method of depositing copper and other metals on the surfaces of various bodies, Chairman Blosser recalled that at the last meeting of the division in Philadelphia there had been some discussion of chlorination as a means of overcoming slime deposits in the papermaking system and he asked Mr. Martin, of Wallace & Tierman to give some particulars of the process, amount of chlorine used and the cost of equipment.

Mr. Martin said that it was the usual practice to figure

1 lb. of chlorine to 1 ton of paper. He referred to its successful operation in the MacAndrews & Forbes Company mill at Camden, N. J., but subsequent attempts to elicit information from A. W. Wickham, of this company, who was present met with no success.

Cost of Equipment—It was explained by Mr. Martin that the cost of the equipment depended on the tonnage of the mill, but varied from $800 to $2,000 at the outside. The chlorination method of preventing slime formation worked best in a closed system as organic chlorine compounds were formed. It was customary to start out with a high dose of chlorine, say 100 lb. and slow down to 45 lb. It was mentioned that in the application of a high dose of chlorine in a tissue mill, the paper was turned a pink color, so care had to be exercised.

There was a good attendance of ladies, the wives and relatives of superintendents. During the progress of the educational session, the ladies were entertained at Longwood Gardens, the estate of Pierre S. DuPont in the outskirts of the city. The Longwood Gardens are noted for the extent and variety of horticulture to be seen there, nearly every known kind of flower and fruit being grown.

Mayor and President of Council at Banquet

The banquet in the evening brought a successful meeting to a most enjoyable close. The division was honored with the presence of the Mayor of Wilmington, G. W. K. Forrest, who expressed the delight of the city government in having men of the type of paper mill superintendents as visitors to the city. Another official among the city authorities served as toastmaster. This was the Hon. William N. Cann, president of the City Council, who introduced the various speakers.

James G. Ramsey, first vice-president of the national association, responded to the welcoming speech of the mayor in interesting fashion, even venturing upon a pun on the mayor's name when he said it was "a treat to have Mayor Forrest welcome us as I believe he is very closely connected with the paper industry, for where would papermaking be if it were not for the Forrests." Mr. Ramsey said that Wilmington was noted in the history of papermaking because the first fourdrinier machine ever built was operated not far from the Augustine mills on the Brandywine river by Thomas Gilpin in 1817. Since that time the City of Wilmington has always been a factor in the paper industry, as evidenced by the Pusey and Jones Corporation, the Lobdell Car Wheel Company and Jessup & Moore Paper Company. He said that superintendents were all graduates of the university of experience, their diplomas consisting of membership in the American Pulp and Paper Mill Superintendents' Association.

After a most instructive address by Dr. Manly P. Northam on "The One Big Secret Back of the Man Who Wins", in which he outlined what he termed the fundamental principles of human activity, a most enjoyable vaudeville program was put on and kept the audience entertained until nearly midnight. There were some remarkable feats of conjuring performed by a student of Houdini. Cards were manipulated in a bewildering fashion and a special committee of four officers of the association, including Chairman Blosser, who ascended the platform to watch the magician's work were as mystified as the rest of the audience. Everything but live rabbits were extracted from their pockets and Jim Ramsey failed to discover that his watch was missing until the performer called him back to the stage and handed it over to him.

The officers of the Pennsylvania-New Jersey division of the American Pulp and Paper Mill Superintendents' Association consist of J. E. Blosser, chairman, Scott Paper Company, Chester, Pa.; Charles L. Ellis, secretary, Downingtown Manufacturing Company, Downingtown, Pa.; J. Bertwell White, treasurer, National Vulcanized Fibre Company, Yorklyn, Del.; S. Carroll Wentz, George L. Bidwell and A. W. Wickham, vice-chairmen.

The committee of arrangements for the Wilmington meeting who were praised on all sides for successful management were J. Bertwell White, chairman; Joseph E. Plumstead, James G. Ramsey, W. M. Shoemaker, Jr.

Spring Meeting S. E. Division Supts.

Round Table Discussions Bring Out Solutions to Many Papermaking Problems

THE Southeastern Division of American Pulp and Paper Mill Superintendents Association held its spring meeting at the Virginian Hotel, Lynchburg, Va., Saturday, March 23, 1929. There was a departure from the usual program, and instead of having a large number of papers prepared, the day was principally devoted to round table discussions of practical papermaking problems.

Discussion on Steam Terms

R. H. Foster of the Westinghouse Electric & Manufacturing Co., presented a very interesting paper, illustrated with slides showing different types and applications of steam turbines. Mr. Foster was followed by W. G. Brace of the Westinghouse Company, who gave a very instructive talk regarding different types of stokers, as well as installations using powdered coal.

This paper and talk evoked a spirited discussion in which it was brought out that the average man's aversion to the use of "exhaust" steam as against "live" steam was due to attributing physical characteristics to these two steam terms, something that is "live" being quite naturally preferred to something "exhausted". However, five pounds of exhaust steam as it comes from the exhaust of an engine or turbine is just the same as if it came from the boiler at that pressure—pressure being a short way of expressing the heat condition of steam. The question as to what extent is by-product power possible and justified in the pulp and paper plant was brought up. The consensus of opinion seemed to be that with modern equipment, only in rare instances did any steam power need to go unused in some way, this steam economy being the result of correct planning and estimating. The first step is to find out the electrical requirements, the amount of power needed in the plant, and the quantities needed at different pressures, after which it can be quite accurately decided what is needed at the boiler. The extent to which by-product power can be used to advantage depends on the extent to which there is a use for exhaust steam. The degree to which by-product power can be used may be limited by the fact that there may only be use for exhaust steam fifty per cent of the time. It was agreed that seldom could a central power station deliver power to the mill as cheaply as the mill itself could produce it, figures as low as three mills per kw.h. being cited.

The question of the kind of steam best suited to the drying of paper developed several opinions, it being stated that steam introduced into a different part of the dryer would produce a marked difference in the drying of the paper, the pressure of the steam itself as it entered the dryer remaining unchanged. This was attributed to the change in the rate of flow of the steam along the inside face of the dryer shell. It was also claimed that the use of wet steam seemed to eliminate the film of gas around the inside of the shell which apparently had an insulating effect, the wet steam effecting a greater degree of heat transferred. When there was insufficient low pressure steam available for drying and live steam had to be introduced, it required many times the amount of dry steam to get the result. Also, the finish was not as good with dry steam.

In connection with the drying of paper it was brought out that an increase of forty per cent in dryer capacity resulted in an increase of machine production of only twenty per cent.

The pre-dryer, it was claimed, is one of the best things for certain grades of paper so far developed. In an instance cited, using 25 pounds of steam in the baby dryer when making a 70 pound sheet, the felts ran over 100 days, where before they had only lasted 40 to 60 days. Mr. Foster recommended that any one interested in heat and power problems should secure from the American Society of Mechanical Engineers, 29 West 29th street, New York City, the paper presented by R. V. Kleinschmidt at the annual A.S.M.E.

meeting last December on the subject "Balancing Heat and Power in Industrial Plants".

Sulphate Smelter Construction

G. M. Trostel, Superintendent of Soda and Sulphate Department of Champion Fibre Company, Canton, N. C., presented a paper on Sulphate Smelter Construction, Design, Repair, Maintenance and Operation. Discussion of this paper developed the fact that some users of this equipment make their own lining, using crushed soapstone and cement. An instance was cited where a water jacketed smelter created its own lining and gave long and satisfactory service.

Questions on Shrinkage Answered

A questionnaire on Shrinkage presented by A. T. Taylor, of the Bedford Pulp and Paper Co., acting chairman, was so interesting and developed so many points for discussion that it could not be completed in the time allotted. Dr. Hugh Baker is authority for the statement that the paper mills of the United States are suffering a fiber loss of $25,000,000 per year in the white water. One member defined shrinkage as the difference between the amount of furnish and that which is shipped. It was brought out that there exists no standard method of figuring shrinkage, some mills including size, alum, clay, etc., and others disregarding these items. It was generally agreed by the members present that items of this sort, which had to be paid for, should be included.

One of the difficulties in using the beater furnished as a factor is that the furnish may vary from 6 to 5 per cent—a difference of 16 per cent, with no change in the volume of water. While it would simplify the figuring of shrinkage to get the difference between the raw materials taken in and the paper shipped, as one member suggested, disregarding the broke entirely, it was pointed out that one month a mill might start with 5 per cent broke and the next month have 10 per cent. Using this 10 per cent of broke would probably result in close to a 100 per cent yield. The mill disregarding broke would be unable to figure shrinkage with any degree of accuracy.

Slush stock was mentioned as introducing an almost unmeasurable variable. It was pointed out that until the national association got back of the project to standardize on methods of figuring shrinkage, working with the Technical Association, it would be impossible to secure comparable results. A mill using 1,500,000 gallons of water a day, if 1/10 of 1 per cent of suspended matter could be precipitated out and retained in the sheet, it would result in a gain of six tons per day. Against this optimistic thought, one member reported a 15 per cent shrinkage, of which they could only account for 62 per cent. This left about 38 per cent of the total shrinkage unexplainable. As a part of this furnish was overissue news, the solubility of the ink, the possible hydrolysis and loss of the gums and non-cellulose content of the ground wood in the news were advanced as partial explanations.

As a means of checking possible losses due to the presence of non-cellulose material in the fiber furnish, the suggestion was made that samples of beater water and machine water be taken and evaporated to determine the difference between them. The difference in shrinkage being greater with an 80 per cent groundwood, 20 per cent sulphite furnish than with 20 per cent groundwood, 80 per cent sulphite, allowance being made for difference in fiber length, seemed to indicate that the theory of a certain degree of fiber solubility was worthy of further investigation. White water losses were also mentioned as being affected by the amount of alum in the furnish.

J. S. Schumaker made a short talk on Humanics, a subject with which the speaker was thoroughly conversant. His remarks dealt with the proper relation between the mill superintendent and the men under his supervision.

The dinner meeting proved an enjoyable occasion. James G. Ramsey, the first national vice president was in attendance and gave a very interesting address, urging all present to attend the convention at Wausau, Wis. in June.

James F. Peake, Professor of Political Science at Randolph-Macon's Woman's College, Lynchburg, Va., gave the principal address of the evening. A plea for permanent world peace was the theme of his remarks.

The Bailey Meter Company, Cleveland, Ohio, announces the formation of a subsidiary company, Bailey Meters (Aust.) Limited, with headquarters at Kembla Buildings, Margaret street, Sidney, N. S. W. Australia. The new company, with C. W. Payne as managing director, will promote the sale of a complete line of metering equipment and automatic control for power plants, water works, industrial concerns, etc.

Westinghouse Engineers Visit Paper Mills

On February 26, 27, and 28, a group of Westinghouse engineers and sales engineers met at Tyrone and Williamsport, Pennsylvania, to discuss recent developments in electrification of paper mill machinery, and to visit mills of the West Virginia Pulp & Paper Company and the New York-Pennsylvania Paper Company in which Westinghouse equipment of recent design has been installed. The group consisted of 35 men, including headquarters and field representatives of both engineering and sales departments from all parts of the country. Boston, Detroit, Cincinnati and Chicago were represented. A group from East Pittsburgh was present. Representatives of the Southeastern district were in attendance, as well as men from Syracuse, Dayton, Milwaukee, New York and Pittsburgh.

Meetings were held in the Lycoming Hotel, Williamsport, during which papers were presented by engineers describing such items as the carbon pile speed regulators for single paper machine drives, multiple motor winder drives, dual frequency calender drives, sectional motor paper machine drives, gear units for paper machinery, and other subjects of a similar character.

Group of Westinghouse engineers and sales engineers at Williamsport, Pennsylvania

Cream of American Industrial Ideas

Fuji Seishi Kabushiki Kaisha Uses American Management Ideas More Effectively Than Do the Originators

By KING HAMILTON GRAYSON
Consulting Research Engineer

THERE are many reasons why fifty per cent of Japan's total paper production and nearly fifty per cent of its wood pulp output come from the mills of Fuji Seishi Kabushiki Kaisha, which, translated into plain American, means Fuji Paper Company, Limited. Probably the most important reason for that situation—more important than the fact that there are 77,700,000 Yen capital (the normal equivalent of one yen is about $0.498—Editor) with which to operate sixteen modern paper and pulp mills—is that Heizaburo Okawa, the venerable president, and Teizaburo Takahashi, managing director, long ago started to study every modern American appliance, machine and system, and then began to apply them more effectively than they were in the paper and pulp mills of North America. Keen business management, fully developed management policies, plus American machinery, American office systems, and American ideas have placed the Fuji Mills far ahead of native competitors and of many of the international manufacturers of paper and pulp.

The Fuji Paper Company, Limited, is the second oldest firm engaged in this industry in Japan. Baron Shibusawa created the first paper factory in 1872. It was known as the Oji Paper Mills, and it is still one of the leaders in the industry. The Fuji Mill Number One was started in 1877, and today a total of 550,000,000 pounds of paper and 540,000,000 pounds of wood pulp are produced annually by the following mills, all expansion units of the original:

Fuji Mill No. 1	Kanzaki Mill	Nakagawa Mill
Fuji Mill No. 2	Kumano Mill	Edogawa Mill
Fuji Mill No. 3	Senju Mill	Ebetsu Mill
Shibakawa Mill	Ochiai Mill	Kanayama Mill
Kyoto Mill	Shirutoru Mill	Kushiro Mill
	Ikeda Mill	

The influence of the Fuji Mills is one of importance in many spheres in Japan. A very large percentage of the forest yield flows into these plants. Japan's total production of wood pulp is 621,887 tons, of which 270,000 tons is produced by the Fuji Paper Company. A comparison of the forest yields for 1913 and 1925 emphasizes the progress of the Fuji business, particularly since they installed American pulp machinery.

Forest Yield of Pulp Timber

Ezomatsu—Silver	70,980,000 cu. ft.	77,205,560 cu. ft.
Todomatsu—Fir	7,763,000 Yen Val.	12,058,930 Yen Val.
Momi—Fir	13,410,000 cu. ft.	13,468,891 cu. ft.
	2,109,000 Yen Val.	1,503,608 Yen Val.

Supply and Demand—Wood for Paper Industry

1924	357,084 tons	59,553 tons	416,633 tons
1925	414,706 tons	77,440 tons	492,146 tons
1926	500,301 tons	63,151 tons	563,452 tons
1927	621,887 tons	74,085 tons	701,706 tons

The above statistics clearly indicate what percentage of the entire industry, from forests to finished products, is under the control of the Fuji mills. American efficiency has taught their managing officials that they must control by ownership or contract, everything from raw-materials to marketing channels. The net result has been that the cost of pulp timber has decreased proportionately with increased output, the quality of their products has been steadily improved through the installation of the best laboratory practices, the wages of workmen have materially increased, the scientific training of workers and the care for their well-being, controlled, straight-line production,—these and many other gains have been made since President Okawa first began to improve upon American management ideas.

Because the organization and management principles of the mills are of the most modern type, work in each one proceeds with unusual Japanese briskness and smoothness. Time and motion studies, together with production control, keep every department and every operation in gear, so that there is seldom any break or delay in the routine. The most up-to-date technical devices in the laboratories and offices, an extensive use of all kinds of machinery, and a planned arrangement of mills and departments restrict manual labor and maintain a steady rhythm of production and a healthy discipline. As part of the efficiency program, picked employees are sent each year to visit and study the paper and pulp mills of the remainder of the world. One of the best policies of the Fuji mills is to treat every employee as if he were an independent business man. This one point is a big improvement on the practice followed in many American factories.

The Japanese are great devotees of their festival days, and considerable attention is given by the management of the Fuji Mills to the way in which their employees spend their leisure time. They are encouraged to take an active interest in games and sports, particularly competitive ones.

The output of the Fuji Paper Mills now covers many requirements as shown in the following list:

Printing Papers	Drawing Papers	Packing Papers
Writing Papers	Tracing Papers	Cardboard
Art Papers	Tissue Papers	Colored Papers
Wrapping Papers		Kraft Papers

The fibers of mitsumata and kozo have given way to the modern advance, and the Japanese paper engineers predict that ten years hence there will be little, if any, Hanshi or Mino handmade papers produced. They base this prediction upon the general educational progress of the Japanese and the introduction of so many American methods and systems that the native papers will not meet the demands of progress with printed matter. This is somewhat verified by the fact that in 1910 there was a total investment of thirty-two million Yen in sixty-four paper mills. Today, the Fuji Company has an investment of 77,700,000 Yen in their sixteen mills. Increased demand for things made of Europeanized or Americanized paper is responsible for the gigantic strides of the paper industry. In addition, every new office appliance which is introduced into Japan, every new method or system which improves business or industrial or living conditions in America and which is based upon the use of paper, is encouraged for use in Japan. It may be the silent voice of the Fuji officials, tinged with good or improved American sales ideas, but whatever it is, the Fuji mills are for it if it means greater paper production and demand. American paper and pulp manufacturers could learn many stimulating points by visiting the Japanese mills—they deserve a close scrutiny by those on this side of the Pacific.

The American Hoist & Derrick Co., 63 S. Robert St., St. Paul, manufacturers of American line of locomotive cranes, American Gopher shovel-cranes, and American hoists and derricks announces the appointment of Mr. A. R. Gelinas as its agent for Ontario, Quebec and the Maritime Provinces. Mr. Gelinas's office in Montreal is located in the McRitchie & Black Bldg., 1434 St. Catherine St. West, Montreal, Que., Canada.

The American Engineering Co., Stoker Division will move its offices about April 20, from 100 Broadway to the American Radiator Building, 40 West 40th street, New York City.

The Texas Gulf Sulphur Co. has removed its general offices from 41 East 42nd St. to 75 East 45th St., New York.

Accountants Discuss Budgetary Control

Budgeting of Works, Sales and Administration in the Control Expenses

THE National Association of Cost Accountants, New York Chapter, of which G. A. Ware, of the News Print Service Bureau, is a director, holds regular monthly meetings at which papers are read and discussed. At last month's meeting the Chapter was addressed by Earle D. Page, assistant controller of the United States Rubber Company, who was chairman of the meeting; Charles Packard, auditor of the Worthington Pump & Machinery Company, and Richard V. Bechtel, of the Colgate, Palmolive Peet Company.

Budgetary control was the topic of the evening. Budgeting insures the prevention of losses through control of expenditures and increase of profits through careful analysis and predetermination of sales not only at the central office but by districts, classes of product to be sold, salesmen's quotas, etc. As pointed out by Chairman Page this is not just an accounting scheme but an operating method requiring the most careful thought of all operating executives from the president down.

Budgeting of Work's Indirect Expenses

C. A. Packard, of the Worthington Pump & Machinery Company, discussed the manufacturing phases of budgeting. He mentioned some of the difficulties experienced by his firm in the past in trying to control expenses without a budget. At times the works are obliged to operate at reduced capacities from seasonal causes when the efforts of the sales organization are not as productive as usual. During such periods it had been the practice in the past for the management to call upon the various divisions of the plant for a general reduction of their expenses so as to bring the expenses in line with reduced operations. The results, however, were seldom satisfactory, for the following reasons:

1—The amount of reductions to be called for was largely a matter of guesswork.
2—The Works had no guide for specific reductions other than from general observation.
3—Reductions were usually not made until quite some time after business had declined.
4—Expenses quickly returned to old levels when "reduction pressure" was lifted.

During periods when the sales quota was exceeded and the Works forced to operate above capacity there was the same difficulty about control of indirect expenses without a budget, the causes of which were stated by Mr. Packard as follows:

1—The increase in expenses which might reasonably be expected with the increased operations was largely a matter of guesswork.
2—During such periods the Works were more concerned with getting out production than in watching expenses and as a result the increase in expense was usually excessive.

Budgetary Plan Decided Upon—With a view to overcoming the difficulties experienced in expense control it was decided to put into effect a budgetary plan providing for:

1—Determination of capacities for each department.
2—Predetermination of all indirect expenses by departments and by capacities.
3—Comparison of actual weekly expenditures with budget for each department, for use within one week by the manager, superintendent and department foreman.
4—Monthly one-page summary of all departments showing the capacities of operation, budgeted expenses and actual expenditures, one copy of this summary being for the use of the works manager and one copy for the director of manufacturing and engineering at head office.

Establishing Normals—It was necessary to sell the idea to the manager, superintendent and foremen at each plant before the plan could be installed. The attention of these men was called to the difficulties previously experienced in maintaining an effective control of expenses with other budgets. A thorough study was then made of the situation at each plant and predetermined expenses or normals were established for each department by the plant manager with the assistance of the foremen. These normals were set in detail for each expense account at nineteen different capacities, ranging from 10 per cent to 110 per cent in multiples of 5 per cent. By enlisting the aid of the foreman in setting his normals he was made to feel responsible for maintaining them. Four complete sets or copies of the normals were prepared, one for the use of the individual foremen, one for the plant manager, one for the office manager and one for the office of the director of manufacturing and engineering at the head office.

Mr. Packard produced actual figures indicative of the success obtained through making foremen in their various plants feel responsible for controlling expenditures, budgets for which they had themselves helped to establish. Thus, while the over budget allowance from January to August before the budget was applied to individual foremen ran $4,217, $7,917, $9,302, $4,339, $5,118, $4,483, $4,241, and $2,807, in September when the budget was applied an over budget allowance of $138 was noted and in the following month there was an under budget allowance of $1,724, with $196 and $101 reported as over budget for November and December respectively.

Each month a summary is prepared by the Works showing for each division the percentage of capacity, normal and actual expenses for the month with the cost per direct hour—normal and actual, also the normal and actual expenses for the year to date.

Sales and Administrative Budgets

It was pointed out by Mr. Bechtel, of the Colgate Palmolive Peet Company in his paper entitled "Sales and Administrative Budgets" that the first and most important thing for budgets was sales by sales territories and classes of products.

Advantages of Budgetary Control

In reviewing the papers and discussions at this meeting of the New York Chapter of the National Association of Cost Accountants it becomes apparent, as expressed by Mr. Ware, of the News Print Service Bureau, that budgetary methods when properly used affords a means of balancing and coordinating the activities of one department with another and therefore makes for better control of the organization as a whole. In this respect bankers are especially interested in the subject in connection with their clients' businesses. Good budgeting does not mean a curtailing of activities within unwarranted limits but it does mean an exercising of greater business foresight in sizing up conditions in the not too distant future.

March Meeting Paperboard Industries

Members of the Paperboard Industries Association met at the Commodore Hotel, New York City, March 20 and 21, 1929. Group meetings were held, and a general meeting the afternoon of March 21 was attended by members of all groups.

Folding Box Group—The meeting of this group was unusually well attended. H. H. Stonebarger, of the Globe Folding Box Company, Cincinnati, Ohio, group vice president, presided and members participated actively in a discussion of the problems of the folding box industry. A detailed report was submitted showing progress made in inaugurating and extending the use of folding boxes for the packing of a number of articles, which may advantageously be packed in folding cartons. Grafton Whiting the association's statistician, reported on uniform depreciation rates, census of the industry and the cost estimating manual now being prepared for the folding box industry.

It was the sense of the meeting that a cordial invitation should be extended to the manufacturers of suit boxes to attend the next meeting of the association to be held in Chicago, May 22 and 23, 1929.

Paperboard Group—Hugh Strange, of the John Strange Paper Company, Menasha, Wis., group vice president, presided over the meeting of this group which was held the afternoon of March 20. Vice President Strange submitted a most interesting report, in which he covered the situation that has obtained in the paperboard industry.

General Manager Browder spoke on the subject, "Eliminating the Manufacture and Use of Inferior Container Board". There was a lengthy discussion of the subject and a number of suggestions were made looking to the elimination of the use of container boards which fail to meet the governing specifications. Attention was called to the activity and drastic action on the part of the railroads in embargoing boxes which failed to comply with the carriers' specifications and it was the sense of the meeting that board manufactured and sold for use in test shipping containers must fully meet the specifications and that the board manufacturer has a direct responsibility in this regard.

The group endorsed the recommendations of the Standardization Committee, which recommendations urged that the facors in the industry support wholeheartedly the schedule of simplified thicknesses as contained in the association's Booklet of Standards, which schedule was adopted with the assistance of the Simplified Practice Division, U. S. Department of Commerce.

The Import Tariff Committee, which was appointed at the November, 1928 meeting of the association, and which reported at the January meeting relative to changing paragraphs 1302 and 1313 of Section 13 of the Tariff Act of 1922 to improve the phraseology of these paragraphs to avoid embiguity, made a complete report. The committee co-operated with the General Tariff Committee of the American Paper and Pulp Association and that Committee's Counsel, Wise, Whitney and Parker, as well as the Import Committee, to whom full credit was given for their tireless efforts in the compilation of the Brief for the entire Paper Industry. This Brief was presented on February 13, 1929 by R. K. Ramsey, vice president of Hinde & Dauch Paper Company to the Ways and Means Committee of the House of Representatives at Washington. At that time, Congressman Hawley, chairman, in closing the hearings stated that the Paper Industry's presentation was the best of all the industries which had been heard in that session. Congressman Garner, of Texas, whose questioning of industries has at times been embarrassing to them, said that the paper men were so well fortified with facts that it was difficult to confuse them. It is now necessary to follow this through the House Sub-Committee, the Senate Finance and Joint Conference Committee hearings.

Container Group Meeting—H. C. Krannert, of the Inland Box Corporation, Indianapolis, group vice president, presided at the meeting. General Manager Browder submitted a comprehensive report of "container" subjects.

R. H. Dollison, of the Fairmont Box Co., Fairmont, W. Va., chairman of the Standardization Committee, submitted a report covering the recommendations of the Committee with respect to: standard weight bases for kraft facings; Elemendorf tearing test for cloth tape and specifications for corrugated and solid fiber boxes for heavier weight limit and of larger size, than now authorized by governing specifications. The recommendations of the committee were adopted.

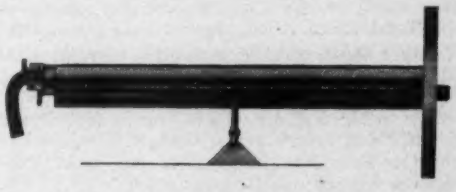
General Meeting—This meeting was presided over by J. J. Brossard, of the Fort Wayne Corrugated Paper Co., Fort Wayne, Ind., president of the association. President Brossard announced that a meeting of the Executive Committee had been held at the Commodore Hotel, New York City, March 18, 1929, and he submitted a report containing a resumé of subjects considered at the meeting, together with record of the action or the recommendations of the Executive Committee with respect thereto.

At this meeting was read the Resolution which had been adopted at the mass meeting of the industry, held at the Commodore hotel, March 19, as follows: "Resolved, that this mass meeting of the Paperboard, Container and Folding Box Industry request the Paperboard Industries Association to assume the administration of the Trade Practice rules, as approved by the Federal Trade Commission for said industry; and Resolved further, that the industry agree to participate pro-rata in the expense necessary for carrying on this constructive work."

The association voted unanimously to adopt this resolution and in accordance with the plan as adopted at the mass meeting, President Brossard announced the appointment of temporary chairman for the various zones.

The Scofield Felt Conditioner

For several years, the Gilbert J. Scofield Company, Inc., 408 North Pearl Street, Albany, New York have been manufacturing a device for installation on paper machines to wash or condition the felts of the machines while in operation. The device has been installed on many paper machines, mostly of the cylinder type, and has worked out very satisfactorily. With information gained from past experience, a new design designated as the Scofield Felt Conditioner has been developed and is now being marketed. This device has been designed for application to any felt and for use on machines making all grades of paper—from finest tissues to boxboard. It is extremely simple in construction. A worm having a single acme thread carries a bronze shoe which in turn supports the nozzle mechanism of the device.



The bronze shoe has a five-thread bearing on the worm. The reversing mechanism of the conditioner is an adaptation of the "load-up and fire" device in use on many machine tools. The entire machanism is enclosed in a casing to insure proper lubrication. Rollers have been added to eliminate friction on the hose and to reduce wear to a minimum. The nozzle connection slot has been located in the bottom of the hose casing to prevent water from entering the mechanism. All parts in contact with water have been made of brass or bronze.

The operation of the device is controlled by a clutch, and a special reverse trip has been provided to permit quick return of the spray water when it is necessary to clean spots or streaks. The spray is on the inside of the felt, cleans through the felt and raises the nap. It is claimed that the necessity of shutting down a machine for washing or roping of felts is eliminated and that the result is increased production at lower costs.

Full information about this conditioner will be gladly furnished by the manufacturer upon request.

Position of North American Newsprint

At the usual weekly meeting of the Salesmen's Association of the Paper Industry held at the Canadian Club, Hotel Belmont, New York, on Monday, March 11, Royal S. Kellogg, secretary of the News Print Service Bureau, was the principal speaker. By means of charts and tables of statistics he pictured in graphic fashion the position of the newsprint industry in North America. Gustav Asplund, commercial attaché of the Swedish Legation, was a guest at the luncheon meeting and on being introduced spoke briefly on the Scandinavian pulp situation. He said that the mills in Sweden and Finland had already contracted for about 83 per cent of their 1929 production of sulphite and approximately 63 per cent of their 1929 production of kraft pulp. Orders were also being received in fair amount for 1930 production, particularly from England, 15 per cent of the production having already been contracted for. Values are firmly maintained and the price tendency was upward, Mr. Asplund said.

Newsprint Background

Mr. Kellogg spoke interestingly concerning the background of the present newsprint paper situation, and exhibited charts showing the steadily increasing spread between production and capacity in North America since 1921, in actual tonnage as well as percentages. In addition he presented a most informing chart in which new machine capacities for each year since 1922 were contrasted with the operating percentages from 1922 to 1928 and part of 1929.

Following the charts, Mr. Kellogg presented a balance sheet

for North American newsprint supply and distribution in 1928 as follows:

Supply	Tons
Production	4,045,000
Overseas Imports	116,000
Decrease, Pubs. Stocks	17,000
Decrease, Mfrs. Stocks	12,000
Total	4,190,000
Distribution	
U. S. Oversas Exports	11,000
Nfld. Overseas Exports	98,000
Canadian Overseas Exports	272,000
Mexican Consumption	17,000
Canadian Consumption	174,000
United States Consumption	3,618,000
Total	4,190,000

This balance sheet, checked with other estimates indicated, Mr. Kellogg said, that 1928 consumption in the United States was 3 per cent greater than in 1927.

According to Mr. Kellogg, the following factors are favorable for 1929 and future years, though it will take several years for the newsprint industry to get back to a proper ratio between capacity and consumption.

1—Manufacturers' stocks at end of year back to normal —three days supply.

2—Publishers' stocks also at low level—these are likely to be increased slightly now that a definite price has been set.

3—Newspaper advertising to date is running 5 per cent heavier than for the corresponding period of 1928. This is accompanied by an even greater increase in periodical advertising which is a healthy sign. In some quarters it is predicted that 1929 newspaper advertising lineage will equal or exceed 1926, the record year.

4—Circulation to date is running about the same as for the corresponding period of 1928.

5—Sunday papers of over 100,000 circulation showed an increase of 2 pages per issue in January, 1929, over January, 1928. February, 1929, was equal to February, 1928. General indications are that at least for a time the tendency toward a shrinkage in the size of Sunday papers has been checked.

6—Daily papers of over 100,000 circulation showed an average increase of one page in size over the same months in 1928.

7—Canadian overseas exports are believed likely to increase to 300,000 tons in 1929, owing principally to increased consumption in England.

The Tinting and Coloring of Newsprint

In a recent issue of **Dyestuffs**, a publication of the National Aniline and Chemical Company, E. W. Camp has an interesting article on the tinting and coloring of newsprint paper. White newsprint differs in shade from a bright creamy natural tone to a deep blue-white. In the majority of cases the bright natural tones are the hardest to match, one reason being that so little color is required that there is not sufficient to cover the pulp well. If one mill can establish a certain shade it does not, however, follow that all mills are able to match it. There are several factors which enter into the question, some of which it is not possible to alter.

If a mill is using old wood containing fungus growth or burnt wood, there will be difficulty in obtainnig the same brightness of stock as in the case of a mill using comparatively freshly cut wood.

Some mills wash their sulphite pulp more thoroughly than others do. Any acid left in the stock will affect the color quite appreciably. This is especially noticeable in some of the smaller newsprint mills which have no sulphite mill, and are forced to buy their sulphite pulp from various sources. Occasionally a shipment of pulp will be received that has not been well washed. As soon as this pulp is used a change in the shade of the newsprint sheet will be noticed. The water used in some mills has an appreciable effect on the shade of the newsprint sheet and may cause a noticeable variation, depending upon the season.

If the pulp itself is dull in shade it will be almost impossible to match exactly a bright natural tone sheet. In such a case it is recommended to use certain mixtures of national aniline dyes specified by the author.

It is noted by Mr. Camp that newsprint was formerly colored in the beaters but modern mills have all installed automatic mixing systems whereby the groundwood and sulphite pulp, color, and alum are fed in simultaneously in a continuous flow. The color should first run into the groundwood pulp and become fairly well mixed with this stock before mixing with the sulphite. Basic colors have a much greater affinity for sulphite than for groundwood and if strong color solution should mix with the sulphite pulp it would color some of the fibers a deep blue, resulting in blue fibers showing up in the finished white newsprint sheet. If this occurs, it can be remedied by connecting a pipe to the color outlet so directed that the color solution will run into the groundwood stock before this is mixed with the sulphite.

Many of the mills have discontinued the use of alum entirely with satisfactory results, even in colored newsprint. If much alum is used in mills that have hard, dirty water it will tend to dull the shade of the finished sheet through precipitation of solid matter which will carry a certain amount of dirt down with it.

The color tanks are generally in pairs, so arranged that while one is being used in connection with the mixing system, fresh color can be dissolved in the other. They are equipped with paddles driven from a motor to give constant slow agitation and have also a steam pipe for dissolving the color. Care must be used in dissolving basic colors. The color powder should be well mixed with water and made into a thin paste before the steam is turned on. If live steam comes in contact with dry dye powder it will turn it into a tarry mass which is very difficult to dissolve. Color tanks are often installed in the basement and the color is pumped up to a small box above the mixing system fitted with an overflow pipe to carry excess color back to the particular color tank which is then in use. This provides a constant head of color solution and ensures the color being fed to the mixing system in an even, constant flow.

Colored newsprint, which is used mostly for late editions and sports extras, is made in various shades of pink, and in peach and green. These papers may be colored from the mixing system in the same manner as white newsprint, though, of course, the color solution must be made up much stronger. White newsprint requires from ½ to 1½ oz. of dyestuff per ton of paper, depending upon the depth of shade, while colored newsprint needs from 10 to 30 oz. of color per ton.

Record Enrollment for Sulphite Course

The first of two ten-day courses in sulphite pulping scheduled by the Forest Products Laboratory for this spring got under way March 25. Fifteen men (the maximum enrollment for the class) answered the initial roll call. Eleven companies were represented. Two of the companies had men in identical 1927 courses, one sending the same man who registered in the present class. This particular mill superintendent, a man of extensive practical experinece, applied the instruction received in the previous course to good advantage, but he enrolled again with the expectation of extracting the absolute maximum of benefit from the instruction offered.

Two of the companies sending men to the March 25 course enrolled two each. One company, operating a number of mills, enrolled three men.

A second sulphite course will be given at the Forest Products Laboratory April 29 to May 9. Enrollments for this course will as usual be limited to fifteen. Ten of these enrollments have alrady been subscribed. Director C. P. Winslow has announced that additional enrollments, accompanied by the cooperative fee of $200 for each man enrolled, up to the maximum will be accepted in the order of receipt.

❖ NEW ENGLAND ❖

Industry Shows Increased Production

A bird's-eye view of conditions in the New England paper industry at this time can be obtained from the report submitted on March 27th by the Paper and Pulp Committee of the New England Shippers Advisory Board which met that day at the Copley Plaza hotel, Boston. Pat J. Dowd, of the Holyoke Traffic Bureau is chairman and C. L. Whittemore of the New England Paper & Pulp Traffic Association is vice chairman of the committee.

On newsprint, wood pulp, manila rope, and jute papers, the report represents operations at practically full capacity with every indication of a continuance at capacity production for the months of April, May and June. On printing papers, book including surface coated papers, tag board, writing and wax papers there will be an increase of two per cent over the same period last year. On paper articles, envelopes and papeteries, blank books, pads and tablets, paper napkins and tissue papers, the indications point to the following: on envelopes, shipments will be approximately the same as in 1928; on papeteries, tissues and napkins there will be an approximate increase of 5 per cent as compared with the same quarter of 1928; pads, tablets and flexible bound books will also move in about the same volume as in 1928; pulp board, chip board and strawboard are at full capacity production and will show an increase in movement fully 8 per cent over the same period last year.

The most startling feature of the report, due in part to the strike prevailing in Sweden a year ago, was the prediction that imported wood pulp at Boston and Portland will show an increase of approximately 25 per cent for the same months April-June inclusive of 1928.

The committee paid a glowing tribute to the New England carriers. There were no complaints—car service was of the best during the first quarter of the year.

An increase of 86 per cent in net profits despite a reduction in sales of almost eight per cent is the outstanding feature of the second annual report of the American Writing Paper Co., Inc., of Holyoke. Net sales were $12,199,044.74, a drop of $1,140,485.30. Net profits were $277,933.81. Production for 1928 was off to 61,930 tons, a decrease of 9.86 per cent. For plant additions and betterments the company spent $768,556.86, and for maintenance and repairs $402,564.24 but there was no depletion in the net working capital which remains at seven and one-half times current liabilities. Losses from bad accounts were one-half of one per cent last year.

Great Northern Buys Indian Spring Mill

A unit of the American Woolen Co., called the Indian Spring mill, adjacent to the Madison, Me. plant of the Great Northern Paper Co., has been purchased by the latter mill. Acquisition of this plant will give Great Northern an opportunity to better balance its production at Madison, where it has more Mitscherlich sulphite capacity than is required in its output of newsprint and rather less groundwood than can be used with the mill at capacity. With the installation of converting equipment in the four-story brick plant obtained in the deal, it will be possible to manufacture some sulphite specialties without installation of new machines.

An immediate advantage obtained by this purchase is the water rights of the woolen mill; the stoppage of flow through the old Smith wheels at this plant will raise the level of water behind the Great Northern's dam and provide additional power at its new hydroelectric plant directly across the river at Anson. This plant has provisions for the installation of further turbo-generating capacity.

Bird & Son, Inc., are large users of the products of the Bird Machine Co., of South Walpole, Mass. The most recent transaction between these two companies which were founded by the same family was four new screens to the Phillipsdale, R. I. division of Bird & Son, Inc. They are replacing similar machines which have been in use for 12 years. About 100 tons daily is the Phillpsdale production. February, although a short month, was a record one for shipments by the building and roofing departments of Bird & Son, Inc., with nearly 9,000 tons loaded.

Defendants Appeal Suit Won by Story Parchment

A suit decided in favor of the Story Parchment Co., of Trenton, Mich., has been appealed by Kalamazoo Vegetable Parchment Co., and Patterson Parchment Paper Co., of Passaic, N. J. from the Federal District Court at Boston to the United States Circuit Court for the first circuit. The defendants have until May 1st to submit evidence for appeal. Judgment against the defendants is also stayed until that time.

Last summer suit was brought by the Story company in which they alleged a conspiracy in restraint of trade with the object of forcing them out of the paper parchment business. Much evidence was submitted by both sides of the case and there were several long sessions of oral testimony before the jury who decided the case. Price cuts by the defendants acting according to allegations with the West Carrollton Parchment Co., were adduced. The West Carrollton company was not made a defendant because the plaintiff could find no evidence of business done in this district.

Letters to the Land O' Lakes Ass'n, Armour Co., Atlanta Paper Co., Zellerbach Paper Co., Fairmont Creamery Ass'n were introduced.

The jury made a rather extraordinary verdict; an award of $65,000 was granted to the plaintiff, but an alternative verdict found simply in favor of the defendants, providing their first decision should be found contrary to law either in the Circuit Court or the Supreme Court. On March 18, Judge Brewster in Federal Court at Boston approved a motion of the plaintiff for an award of three-fold damages, or $195,000 and an attorney's fee for the plaintiff of $27,500.

Eastern Manufacturing Co., South Brewer, Me., has extended its New England distributing agencies by appointment of Arnold Roberts Co., in the New Haven district.

Tariff Matters

New England newsprint mills are hit hard by the proposed changes in newsprint rates. New York State obtains the advantage which it has been seeking on shipments to the Chicago market. Northern New England mills which have reached that district on a rate of 38½c will be jacked up to 47½c. Traffic managers after studying the scale believe that it figures about 126½ per cent of Zone A, Central Freight Association. Rates to intermediate points apparently are based on the usual percentage of the Chicago-New York basic rate. Representatives of all New England mills affected have been present at the Florida hearings.

The Bangor & Aroostook R. R., whose newsprint traffic originating at the Great Northern Paper Co. mills is an important source of revenue, have offered at sixth-class New England Zone A scale to New York City, which would be 32c against a present 29c. Beyond New York City, to Philadelphia, Baltimore, etc., in trunk line territory, rates are grouped in arbitrary blocks.

One of the most important matters for which New England will fight is the retention of the Canadian differential rates which at first glance appear to have been wiped out by the proposed rates to C. F. A. points.

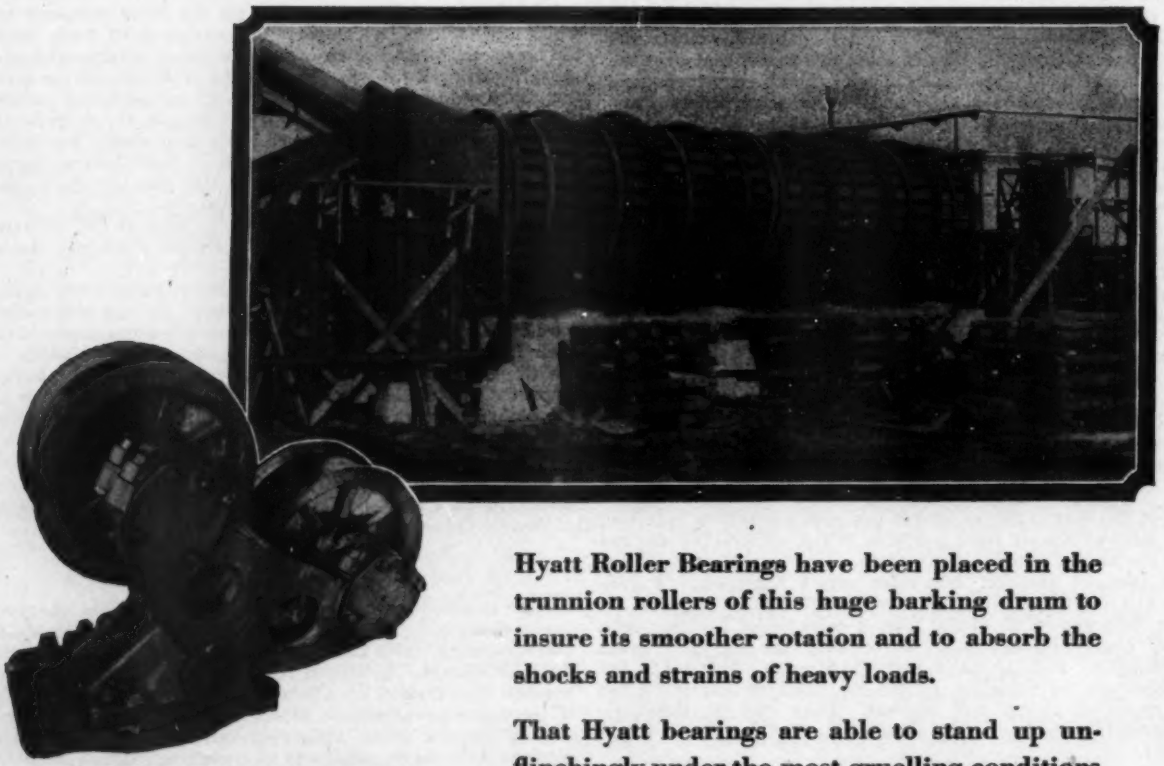
Suspension has been granted the New England Paper & Pulp Traffic Association in its case against the Maine Central R. R. on shipments from originating points on the latter carrier to New York State. A suspension on Boston & Maine-Maine Central rates is also expected. I. C. C. will announce hearing dates later.

Eastern Manufacturing Co., Bangor, Me., won an easy victory over the carriers in its I. C. C. complaint asking for reparation on rock salt from New York State points to South Brewer, Me. At the hearing held in Boston last month, reparation on the basis of a 27.50c per 100 pound rate was granted, (the rate charged was 28.50c) although the

Hyatts in Barking Drums, too

WHERE power savings, smoother operation, increased speed, and lower maintenance costs are desirable in the processes of pulp and paper making, you will find free-running Hyatts at the important bearing positions.

Enduringly they carry on in their appointed assignments . . . without interruption after years of unwavering satisfaction.



Barking Drum built by Waterous Limited of Brantford, Ontario, Canada. Hyatt Roller Bearings are used in the trunnion rollers for permanent operating smoothness and economy.

Hyatt Roller Bearings have been placed in the trunnion rollers of this huge barking drum to insure its smoother rotation and to absorb the shocks and strains of heavy loads.

That Hyatt bearings are able to stand up unflinchingly under the most gruelling conditions is the best testimonial in their favor.

And that is why it will pay you to specify these better bearings for applications that call for the kind of performance that is built right into Hyatts.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

present rate stands at 25.50c, a further voluntary concession by the carriers to equalize other inequalities in the rate structure on this commodity.

The Champion International Co., of Lawrence, Mass., manufacturers of high grade coated papers, has installed one Taylor stoker made by the American Engineering Co., and providing the performance is all that is predicted for it, will install a second at an early date. The engineers were Charles T. Maine & Co., Boston.

Frank B. Cummings took office last month as sales promotion manager for the white paper department of Hollingsworth & Whitney Co., of Boston with mills in Maine. Mr. Cummings was formerly president of the Storrs & Bement Co., leading Boston paper merchants, retiring from that firm two years ago. It will be part of his work to familiarize the trade with the varied line of high grade papers which this company produces, a line which has been greatly extended of late years. Sales development work will be undertaken on an even broader scale than before on Hollingsworth Bond, the No. 1 sulphite paper of this company.

A new E. D. Jones Co. beater has been ordered and will shortly be delivered to the Tileston & Hollingsworth Co., of Boston. A new paper machine is to be purchased in the not far distant future, the exact size and nature of this fourdrinier not having been fully decided upon at this writing.

The annual conference of distributors and management of the Associate Mills: Chemical Paper Mfg. Co., and Crocker McElwain Co., of Holyoke, has been arranged for the last week in June at the Hotel Griswold, New London, Conn.

N. E. Council Studies Industrial Relations

Employment stabilization is the latest work which the New England Council, a group of New England industrial leaders, has set its energies to solving. In endeavoring to offer New England mills the benefit of successful practices along this line, the council committee composed of such outstanding figures in New England business as A. Lincoln Filene, Boston retail merchant; H. C. Knight, of the Southern New England Telephone Co.; Edmund C. Mayo, of the Gorham Mfg. Co., Providence; Charles Ault, of the Ault Williamson Shoe Co., Auburn, Me.; M. A. Dickinson, of the New England Box Co., Keene, N. H. and Ernest H. West, of Dorset, Vt., studied the policies of several industries who have been notably successful in maintaining skilled personnel and also in maintaining full time operations a very large part of the year.

In the paper industry the two conspicuous examples studied were the Associate Mills, Holyoke, and the Strathmore Paper Co., Mittineage and Woronoco. In the case of Strathmore, it was found that the management credits its stabilized business to incessant experimentation and research. The company experiments with incentives for better work, and therefore for better earnings, and this is its outstanding feature. The company has for several years practiced a most detailed control over the sources of waste. It has put most of the men on an individual bonus. By frequent checking, reasonable maximum and minimum standards of production are determined and by this information piece work rates, group and individual bonus rates are worked out. These bonuses added to the regular compensation make the total remuneration of employees higher than that for similar work elsewhere in the belief of company officials. Waste allowances per machine are carefully determined and bonuses fixed upon improvements over the standard set. All of these factors stabilize business and, therefore, employment.

Crocker-McElwain Co., and Chemical Paper Mfg. Co., it was brought out have a very carefully planned method of maintaining a skilled personnel. The plan works out by requiring five years of faithful service; thereupon the employee applies for full time employment guarantee. Approval of his application must first be rendered by his foreman and the department manager, and lastly an interview with the vice president decides the matter definitely. The plan then becomes operative. In such dull seasons as occasionally occur and when shutdowns become necessary, these men are used for making repairs, installations and general cleaning and not until these things are done is he allowed to draw his pay while idle. The plan has produced a fine esprit de corps, a surpassing degree of loyalty to the company, and efficiency of men and quality of product. The company has fifty per cent of its men on this basis and has not found it necessary to build up a reserve against the contingency of a shutdown, because increased efficiency since the plan became operative in 1921 has more than made up for the cost by larger sales and net profits.

Further development is announced at the plant of the Deerfield Glassine Co., at Munroe Bridge, Mass., whose improved glassine papers have excited widely favorable comments in the country's markets. Ira J. Owen, consulting industrial engineer, has become a large stockholder and been elected to the board, taking the position of production counsel. Natural advantages of the mill are believed to insure for it a great future not the least of which is its splendid water supply. Since its new product "Glassite", a paper suitable for packaging sealed parcels, has been put on the market, sales have further increased.

The Worcester Club of Printing House Craftsmen was entertained at the mills of the Tileston & Hollingsworth Company on the evening of March 21. The T. & H. entertainment division rendered a pleasant musical program and A. V. Howland, vice president, described the development of the company since it came into the control of Amor Hollingsworth about twenty years ago.

The legislature of Maine is being asked by several paper companies that import pulpwood through Portland, from the Canadian provinces to abolish the compulsory pilotage provisions at the city. Insurance companies, the Pilot's association and others are energetically opposing the bill.

It appears now as very likely that the International Paper Co., will be granted permission to construct a dam or series of dams at the Fish River site selected. They will then build a paper mill at Van Buren, Me., and probably a pulp mill across the River in New Brunswick pumping pulp across the boundary as is done at Madawaska by the Fraser Companies, Ltd. A 100 mile electric railroad connecting with the Canadian Pacific and running across northern Aroostook county, Me., would open up several hundred thousand acres of pulpwood lands owned by the International Paper Co.

Boston Paper Trade Ass'n Meets

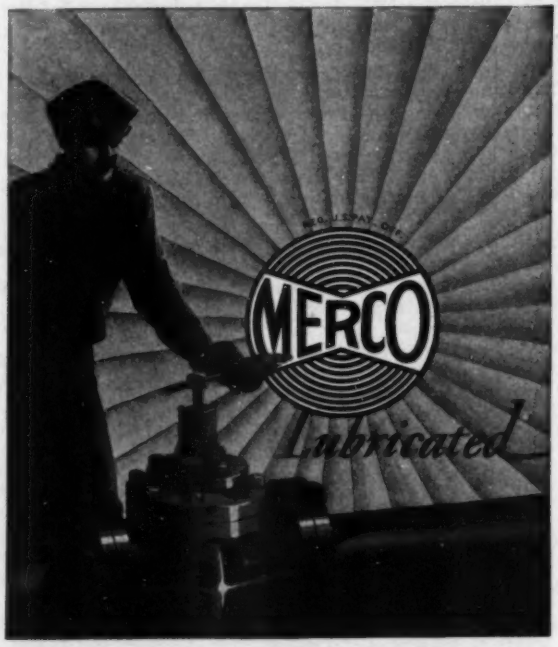
Boston Paper Trade Association held its forty-third annual meeting at the Algonquin Club, Boston, on the evening of March 20. The speaker of the evening was Henry I. Harriman, president of the Boston Chamber of Commerce and head of the New England Power Association, a subsidiary of the International Paper Co.

New members elected included F. E. R. Chapin of Millers Falls, James B. Ramage of Holyoke and R. H. Casey of Shelton Springs, Vt. Officers were reelected for the ensuing year: Hubert L. Carter, president; Albert R. Smith and Charles A. Esty, vice presidents; F. Bendil Tracy, secretary, and Thomas H. Casey, treasurer. Executive committee consists of Norman Horrower, Charles W. Fields and W. E. Porter, Jr.

A most interesting proposal was laid before the meeting in view of the flourishing financial condition of the treasury: this was a proposed trip to Rye Beach, N. H. instead of the usual summer outing at some golf club near Boston. This holiday would cover two days and several forms of entertainment would be provided. The meeting voted quite decisively in favor of the change in plans. The pleasant occasion is planned for June.

Parker Young Co., of Lincoln, Me., is progressing steadily with a program of development looking to increased output,

Stop *Leaks* in Valves *permanently*



Engineers are adopting these *Lubricated* Valves *with excellent results*

Engineers have been quick to investigate and test the anti-leak features of Nordstrom Valves and as a result are adopting them in many severe services in the Paper Industry.

Nordstrom Valves won't leak because application of the hydraulic principle forces lubricant under pressure around the plug, assuring a tight closure and preventing the entry of foreign matter.

Nordstrom Valves won't stick because the lubricant exerts an upward pressure on the tapered plug and releases the plug if it becomes tight.

The basic design of the Nordstrom Valve has proved itself correct over a period of twelve years in practically every kind of plant requiring valves. Its features are fully patented.

Special "Merco" Lubricants

"Merco" Lubricants are available for a wide range of valve services. These lubricants are compounded by us and are recommended for use in all Nordstrom Valves.

For the Paper Industry

Nordstrom Valves are recommended for many services in the Paper Industry. Included among these are the following.

acid storage tank service
overflow tank service
dilute calcium hypochlorite
blow line diffusor room
recovery room
mixing room
evaporators

Send for our new illustrated Catalog No. 6, which explains in detail the application of Nordstrom Valves to the Paper Industry.

Merco Nordstrom Valve Company
Subsidiary of The Merrill Company

Engineers - - - Manufacturers

NEW YORK—11 W. 42nd St.
NEW ORLEANS—Masonic Temple Bldg.
BOSTON—184 Boylston St.
HOUSTON—Petroleum Building.
PITTSBURGH — Clark Bldg.
DALLAS—Magnolia Building.
BUFFALO—Genesee Bldg.
LOS ANGELES — 356 S. San Pedro Street.
DETROIT—2842 W. Grand Blvd.
SAN FRANCISCO — 343 Sansome St.
CHICAGO—176 W. Adams St.
SEATTLE—Colman Building.

Agencies in Principal Cities
Canadian Manufacturers—PEACOCK BROS., Ltd., Montreal, Que., Cobalt, Ont., Winnipeg, Man., Vancouver, B. C.
AUDLEY ENGINEERING CO., Ltd., Newport, Shropshire, England
FACTORIES: Oakland, California, and Belleville, New Jersey

NORDSTROM VALVES

economies in operation and new products. New beater and rebuilt beater capacity is one factor in this program and electric grinders, eliminating necessity of much storage during dry seasons, are another feature. A new screenings refiner has made possible the marketing of a very strong 100 per cent sulphite screening.

A new steamer, the Ragnhildsholm, has been placed in regular service between Scandinavian ports and Portland and Boston by the Swedish-America-Mexico line carrying pulp to these ports. The steamer brought 3,000 tons of pulp on her maiden voyage. She is equipped with special plates to crash through the icy waters of the Baltic seas.

T. G. Mangan Promoted

Thomas G. Mangan has been appointed general superintendent of the Livermore Falls, Me., mills of the International Paper Company to succeed the late William A. Murray. Mr. Mangan was previously in charge of the Berlin, N. H., plant of the International Paper Company. He is a graduate of the University of Maine and served with distinction during the world war as a commissioned officer of an engineer regiment. He has had nearly twenty years' experience in the mills, knows everything that is to be known about practical papermaking operations, and more than anything else has the capacity for enlisting the devotion and loyalty of his men in an extraordinary degree.

New Catalogues, Books and Publications

Bristol Company, Waterbury, Conn.—This company's latest bulletin, No. 2000, is descriptive of its automatic electric control valves, motor operated and magnet types. There are a number of illustrations of types for various installations. A complete price list and automatic control data sheet are inserted.

Boston Woven Hose Co., Cambridge, Mass.—A valuable booklet covers the standards of practice for rubber transmission belting. It is a manual of facts and figures including detailed information about "Cyclops", this company's product, which is recommended by them as a belt for all purposes. The catalogue is well illustrated and contains velocity and horsepower tables for ascertaining the size and ply of belt required.

Cameron Machine Co., Brooklyn, N. Y.—James A. Cameron, president of this company, is the author of a 12-page pamphlet entitled "Principles of Slitting and Winding Paper". This booklet is a review of the principles used in Camachine slitters and rollwinders, and will be of interest to all paper and paperboard manufacturers who are interested in improving the quality of rolls and lessening their production cost. Copies upon request.

Cariyle Johnson Machine Co., Manchester, Conn.—A loose leaf clutch catalogue shows the various sizes and types of Johnson friction clutches, prices, dimensions, etc., and also includes reprints of the company's advertisements in various industries. The general catalogue is put up showing these clutches and a page of the application in each of about a dozen large industrial fields. A catalogue is also assembled for each industry showing various applications of clutches to different machines and problems in that particular industry.

Combustion Engineering Corp., New York City—A descriptive booklet MR-1 covers the C-E Multiple Retort Underfeed Stoker. The advantages of this super-station type stoker are fully set forth and the construction of the component parts explained. There are a number of illustrations of parts and installations, also two full page diagrams showing two views of a stoker installation. This company has also issued a new catalogue illustrating and describing the Type K Underfeed Stoker, applicable to boilers up to 200 hp., which they manufacture.

Elgin Softener Corp., Elgin, Ill.—This company is distributing an interesting 12-page treatise entitled "Control of Boiler Water Concentrations". It is illuminated with charts and photographic illustrations which make it a very readable document.

Foster Wheeler Corp., 165 Broadway, New York—A 52-page catalogue No. 037 on the subject of the Aero Unit System of pulverized fuel firing covers briefly the development and application of the unit system for firing pulverized fuel. Its chief appeal consists of a large number of illustrations showing plants equipped with Aero unit pulverizers and corresponding line drawings giving sectional elevations through the steam generating units. Copies upon request.

General Electric Company, Schenectady, N. Y.—The thirty-seventh annual report of this company as of December 31, 1928, has been issued in attractive booklet form. A complete record of the earnings of the company for the year 1928 is given, also interesting information outlining its various plans for employees, and a list of the personnel of the company, as well as sales offices, service shops and distributors.

W. A. Jones Fdry. & Mch. Co., Chicago—A new general catalogue is called the Jones Blue Book, Catalogue No. 42. There are about 500 pages which contain complete listing of the company's line of products, and practical working data of everyday usefulness to any purchasing agent, engineer or production man. Copy upon request.

Kalbfleisch Corp., 200 Fifth Ave., New York—An anniversary booklet has been issued to mark the close of one hundred years in the chemical industry. There is a brief history of the company, its officers and directorate, plants, mines and branch offices. Each chemical handled is briefly described and its application explained. There is a special chapter in which are listed chemicals for the paper industry. A number of chemical tables are given and the book is profusely illustrated.

Metropolitan Life Insurance Co., New York—"Safety in Welding", the most recent industrial publication of the Metropolitan Life Insurance Co., is based upon the study of welding practices and presents the outstanding health and accident hazards involved with suggestions for overcoming them. This study has been made and published for officials of organizations in which welding has become an important operating process or where welding is used as a medium of maintenance and repair. For copies, address Policyholders Service Bureau, Metropolitan Life Ins. Co., One Madison Ave., New York City.

BOOK REVIEWS

Manufactured Weather in the Printing and Lithographing Industries—This very interesting book has been written and prepared by D. C. Lindsay, physicist and R. T. Williams, formerly of the United Typothetae of America, and represents the result of some 20 years' experience on the part of the publisher, the Carrier Engineering Corp., Newark, N. J., in installing air conditioning equipment, or as they prefer to call it, "Manufactured Weather", in printing and lithographing plants throughout the world. The book is an endeavor to present in plain and non-technical language just what the purposes, methods and results of air conditioning are in the printing industry.

This book is in four parts. The first deals in simple language with the properties of air, explaining relative and absolute humidities, dew-point and other terms used by the air conditioning engineer, and showing the wide fluctuations of natural weather conditions and their effect upon printers' materials. The second section explains the apparatus and method by which the Carrier Engineering Corporation creates fixed conditions of temperature and relative humidity. Air conditioning as a problem of management is discussed in the third part, and the last division deals with psychrometry, explaining the Carrier Psychrometric Chart and showing how any printer may keep track of the fluctuating weather conditions in his own plant. The book is profusely illustrated with pictures of equipment in various printing plants, tables and charts, and will serve as a permanent reference work on the subject. It may be obtained by any printer or lithographer by request upon his own letterhead.

Manufacture of Pulp and Paper—With the second edition of Volume V of this series, the revision of these five volumes has been completed. Volume III which deals with the manufacture and treatment of wood pulp, was revised and enlarged in 1927. Volumes IV and V which deal with the manufacture and testing of papers, may be considered as two parts of one subject, and this has been taken advantage of in rearranging them somewhat so that the entire subject of paper machines has been included in Volume V. This necessitated the transfer of the section on General Mill Equipment to Volume IV which was revised and published in the second edition in 1928. The section on coated papers in Volume IV has been entirely rewritten. The inclusion of the entire section on paper-making machines has greatly increased the size of Volume V. This series of industrial textbooks is strictly up-to-date and apace with the most recent developments in the art of papermaking. This work is published by McGraw-Hill Book Company, Inc., 370 Seventh Ave., New York City. The price of Volumes I and II is $5.00 each; III, IV and V, $6.00 each, postpaid.

Chemistry of Pulp and Paper Making—The second edition of this work by Edwin Sutermeister has just been received. The first edition was published in 1919, and as there has been much activity in the pulp and paper industry along technical lines, this has resulted in the development of several new processes and increased knowledge of many others. The author deemed it advisable, therefore, to go over the technical articles published since 1919, review and incorporate such material as seemed of sufficient importance and rewrite any portions of this book which were found to be in error in the light of increased knowledge.

In this work the author has endeavored to include all details which the chemist should have to enable him to grasp the methods of manufacture, but it is not intended to be a treatise on papermaking in all its mechanical phases; in fact, the mechanical features of the industry are discussed only in so far as they are necessary for a satisfactory understanding of the chemistry involved. It has been written chiefly with the idea of helping the young technical man, whether chemist or chemical engineer, and it has, therefore, been assumed that the reader has a fair knowledge of the elements of chemistry. At the same time, it has been attempted to write as simply and plainly as possible. The subject matter has been collected from personal notes and experiences during the author's twenty years' service as chemist in the industry, as well as from a careful review of the literature relating to the subject. In the methods of analysis and testing which are given, the attempt has been made to include all which are necessary for routine work in controlling operations. The price of this volume is $6.50 net. John Wiley & Sons, Inc., New York City, are publishers.

The Paper Industry Pays Too Much

ITS lubrication costs are high. A million dollars a year is being wasted! Paper mills are not only using an unnecessarily large gallonage, but lubricants are regularly specified which are not right for the purpose. There is too much buying on a price basis.

The right lubricant in the right place and just enough of it—no more—is the answer. That is the plan upon which The Texas Company operates. Its Lubrication Engineers are specialists in Paper Mill lubrication. They know conditions and know how to meet them—and they are supported by a Texaco Lubricant for every known purpose.

Texaco Regal Oils, Calendar Lubricants, High Temperature Greases, Star Greases and Cylinder Oils are saving money in hundreds of paper mills today.

The Texas Company welcomes inquiries. Texaco Lubrication Service is everywhere available.

TEXACO LUBRICANTS

THE TEXAS COMPANY
17 Battery Place
NEW YORK CITY

TEXACO

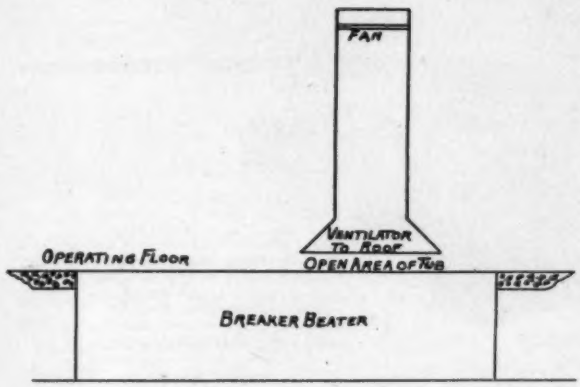
Offices in
Principal Cities

THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE

Practical Helps for the Mill Man

Ventilator for Breaker Beater

A LARGE breaker beater installation in a mill producing paper board was operated with stock at a temperature of approximately 160° Fahr. The beater was installed with the top of the tub level with the beater room floor. During the winter months because of the temperature of the breaker beater stock, considerable trouble was experienced with vapor rising from the tub. The large volume of vapor rising from the tub made working conditions about the room not only



unpleasant but often dangerous. To make the working conditions more pleasant and to eliminate the accident hazard was the desire of the paper mill superintendent. A hood of galvanized iron was constructed over the open portion of the tub and a duct was extended from the hood to the roof. The duct was equipped with a fan of size sufficient when in operation to draw the vapor rising from the stock in the tub into the hood, through the duct, and deliver it outside the mill. In this way, a very economical installation made it possible to reduce the accident hazard involved in the operation of the beater and improved the working conditions about the room.

Beater Roll Raiser

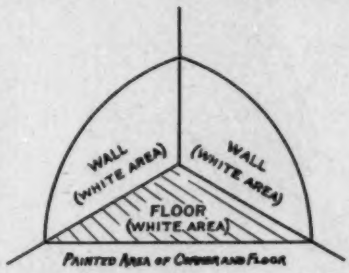
A MASTER mechanic in a middle western board mill felt the need of an easy way to raise the roll of one of the large beaters in the plant. Since the roll had been originally designed to be raised through the manipulation of the ordinary hand wheel arrangement, it was decided to equip the hand wheel shaft with a tight and loose pulley and to connect this pulley arrangement through a suitable belt to the beater roll spindle.

The tight and loose pulley was located on the hand wheel shaft at a point that permitted an easy drive from the beater roll spindle. Such a pulley must be located in reference to the available space on the beater roll spindle so that the belt can be easily placed on the spindle and connected with the tight and loose pulley.

It is now possible when the beater is in operation, the belt running over the loose pulley, to simply shift the belt from the loose to the tight pulley thus operating the hand wheel shaft and raising the roll. The roll through this drive might be inched to any desired height. In some cases it might be advisable to substitute a pulley and clutch arrangement for the tight and loose pulley. Such a simple device has been found of great help to the beaterman in the performance of his duties.

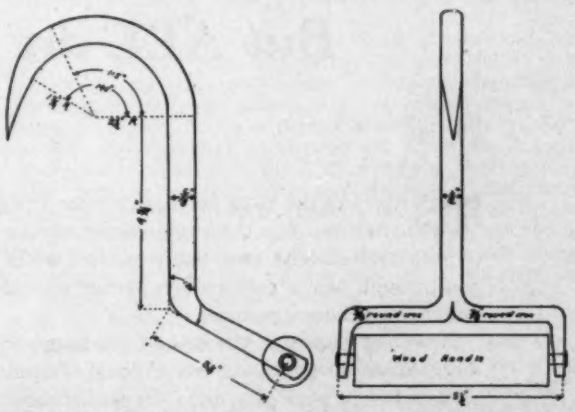
Sanitary Corners for Mill Buildings

POORLY lighted corners in plant buildings near walkways, corridors, stairways, etc., frequently are used by thoughtless employees as convenient places to throw various small items of which they desire to be relieved. In other instances, such corners may be used as places in which to spit or to leave cuds of chewing tobacco. It is purely a careless habit on the part of some individuals, but this habit has caused many corners such as have been mentioned to become foul smelling and very unsanitary. This condition can be relieved, or at least much improved by painting a small area of each of these corners near the floor with a good white paint. In some cases, it might even be of advantage to paint a small area of the floor, so that the entire corner section becomes sufficiently well illuminated to make it uninviting to the careless.



A Balanced Wood Hook

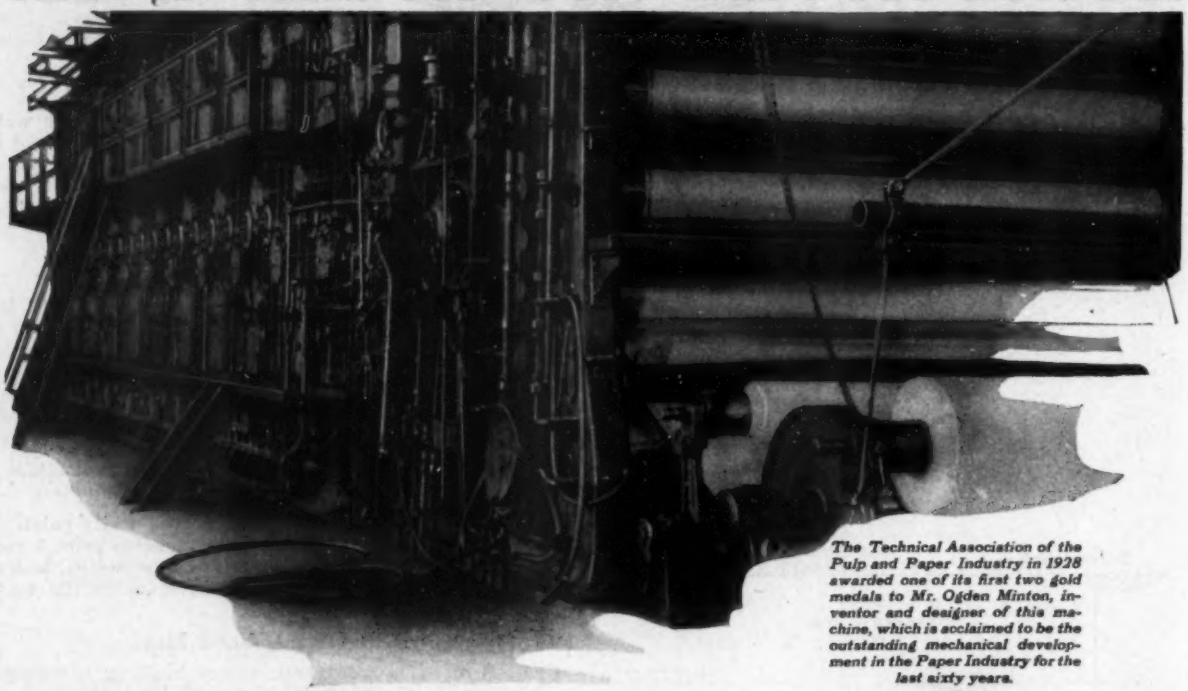
THE use of a wood hook in the handling of pulpwood blocks in the yard or wood room of a pulp mill presents a hazard of no little importance. The ordinary hook with straight shank unless most carefully handled may prove the source of minor injuries to the workers. A worker might accidentally fail to properly engage or disengage the point of the hook with a block and the swing of the hook cause injury by jabbing the point of the hook into the ankle, leg,



thigh, or other part of the body such as the hand or forearm opposite to the hand in which the hook was held or even in unusual cases to the forearm of the same hand in which the hook was carried. Such injuries are not uncommon to those who manually handle wood around a pulp mill.

One well-known organization has developed a hook for handling wood with characteristics in its design that tend to eliminate some of the possibilities of accident through its use. The shank in this design of hook has been bent on a 120° angle at a point 3¼" from the center of the handle axis. All dimensions for making the hook are given in the accompanying sketch.

$25,000 WORTH OF SKF BEARINGS ARE IN THIS MINTON VACUUM DRYER



The Technical Association of the Pulp and Paper Industry in 1928 awarded one of its first two gold medals to Mr. Ogden Minton, inventor and designer of this machine, which is acclaimed to be the outstanding mechanical development in the Paper Industry for the last sixty years.

Bearings, Bearings and More Bearings— But ALL are SKF

THE fibres of the great northern spruce flow day after day in a thick milk-white stream of pulp over screens, onto finely meshed wires and through heavy presses that extract tons of water from the soggy mass.

A web of paper at the rate of 120 tons per day, almost 20 feet wide, miraculously begins to flow before your eyes and then passes about 1,000 feet per minute into the Minton Vacuum Dryer, where it is dried under a high vacuum.

And at practically every point where a wheel or roller turns, there's an SKF Ball or Roller Bearing reducing friction, eliminating power waste and minimizing the possibility of expensive shut-downs. Few industries know the worth of a quality bearing better than that which produces the world's paper. In the great vacuum dryer shown on this page there are one hundred and fifty-two heavy duty SKF Bearings that cost $25,000! And yet its designer, with a full appreciation of the fact that "nothing is apt to cost so much as a bearing that cost so little," KNOWS that even THAT price is not too much to pay for DEPENDABILITY.

SKF INDUSTRIES, INCORPORATED
40 East 34th Street, New York, N. Y.

2215

"THE HIGHEST PRICED BEARING IN THE WORLD"

The Month at Washington

CONGRESS opens its doors again for the extra session of the 71st Congress in Washington on April 15, principally to carry out the legislative program of the Republican administration as promised by party leaders in the platform, to cover farm relief and to change the tariff. In the later category, we may expect quite a few changes in the tariff on paper and paper products, wood pulp, etc. Of course, a lot of the 17,000 bills which failed of passage at the 70th Congress will also be revived and re-introduced.

Two of the bills passed in the closing days of the last session, affecting postal changes, are H. R. 12898 and H. R. 56. The former becomes Public Law No. 749, to extend the collect-on-delivery service and limits of indemnity to sealed domestic mail on which the first class rate of postage is paid. This has the effect of considerably broadening the scope of C. O. D. service of all types. The other bill became Public Law No. 744 and authorizes the postmasters to issue in the future receipts to senders of ordinary mail of any character, and fixes the fees chargeable therefor. This has the effect of allowing return receipts of any kind of mail, a privilege which has heretofore been accorded only to registered mail, and which opens up a wide avenue of usefulness generally.

A total of 1,722 public and private bills and resolutions were enacted by the last Congress, or about 10 per cent of the bills introduced actually passed.

Recent Government Publications—"Market Research Agencies", 1928 edition, published by the Department of Commerce, is a valuable source book for those interested in any phase of domestic marketing. A complete index classifies data by commodities, function and organization. It will enable paper manufacturers to know what is going on in market research and how the work affects their own business, also help them to avoid duplication of market research by keeping apprised of current and contemplated investigations. The book covers also the functions of advertising, credit, transportation and warehousing.

"Resale Price Maintenance" is the title of Document 546, Part 1, published by Congress, being a complete report of the Federal Trade Commission on resale price maintenance, its general, economical and legal aspects, covering the consumer's attribute, the professional man's interest, the manufacturer, wholesaler and retailer, also discussing the legal status of this question.

"Simplified Practice—What It Is and What It Offers", is the title of a recent bulletin published by the Bureau of Standards on the elimination of waste through simplified commercial practice.

Reasonable Rates for Credit—Banking and credit policies of the Federal Reserve Board will be based on broader developments and longer time objectives than day-to-day or month-to-month changes, and a continuous provision of credit at reasonable rates will be made available to commerce and industry according to plans being developed by the board. The board will seek to steer a course with reference to credit which will safeguard gold reserves held in trust to meet future needs and against a too rapid absorption through rapid expansion of credit.

Eliminating Wholesale Wastes—Studies of wholesale costs being made by the Department of Commerce are expected to reveal wasteful practices in the distribution of merchandise and to suggest means for elimination of these wastes. It is believed that cost formulas from which to determine the relative profitableness of customers, services and commodities are necessary to the efficient conduct of wholesaling.

Compacts Between Unions and Employers—Although all trade union agreements have a similar object, few are alike in detail in their provisions, says the Department of Labor which has been analyzing compacts between unions and employers, and which has just published a bulletin (No. 468) showing the results of a recent investigation in this field. The bulletin describes different methods adopted by the unions in reaching agreements, also presenting various types of provisions affecting union and nonunion employees, wages, hours, conciliation and arbitration, apprenticeship, unemployment and similar topics.

Federal Services to Promote Trade—American business turns to the Government for help in certain matters of fundamental importance relating to stability and improvement in business, says the Bureau of Standards, in outlining some of the activities in which the Federal Government has undertaken to aid the business interests of the country and showing how business makes use of governmental authority and prestige when it is needed.

Welfare of Workers—Surveys made by the Women's Bureau of thousands of industrial plants in the United States have disclosed comparatively few companies that have well-developed personnel departments, where the human side of the organization is given careful and trained attention, and pointing out that considerable emphasis is now being placed by business and industry on the elimination of material waste without similar attention being given to human strength and energy. Industry as a whole, says the Bureau, pays far more attention to the care of its machines of iron and steel than to its delicate machines of flesh and blood, and the resulting waste in human strength and energy is a menace to sustained production and to community welfare.

Utilization of Statistics—While the United States long has had a mass of economic statistics for the use of business and industry, recent years have witnessed a still more rapid development of their collection, says the Department of Commerce. These statistics give a complete picture of the character and trend of economic activity and the principal uses are listed as:

For comparing the condition and trend of one's own business with that of other concerns in the same field; for ascertaining conditions and trends as regards supplies and prices paid for raw materials to determine buying and stocking policies; for ascertaining conditions and trends regarding the industries of groups which are the principal purchasers of one's product, to determnie a production and price program; for comparing wage rates and other factors affecting costs in different competing centers of production; for ascertaining trends in industry, business and finance generally, to enable one to forecast roughly probable changes in demand; for analyzing buying capacity of different local or special markets and determining where it will be most profitable to concentrate sales efforts, etc.

Postal Matters—The Postmaster General has sent a message to 360,000 postal employees in which he states that the postal service is to be conducted in accordance with the principles and practices of successful competitive business and industry, but without profits as the objective.

The Post Office Department has put into effect as of April 1 a reduction in prices of stamped envelopes and newspaper wrappers, etc., due to lower production and distribution costs. New size window envelopes are also on the market, designated the No. 6. Amber envelopes have again been made available in standard quality paper, high back, low back and window patterns.

Change in Patent Appeals—All patent and trade-mark cases now docketed in the Court of Appeals of the District of Columbia were transferred bodily on April 1 to the U. S. Court of Customs and Patent Appeals, newly created under

PAPER STOCK PUMP

The pump case of the Byron Jackson paper stock pumps is split horizontally along the center line of the shaft. Removal of the top half of the case exposes all hydraulic working parts, without disturbing pipe connections. The impeller is of an open type which prevents matting or clogging. It is supported on an extra heavy shaft which is carried in two ring-oiling bearings mounted in an external bearing bracket, completely separate from the hydraulic parts of the pump. This company also manufactures process and water service pumps for all other operating conditions.

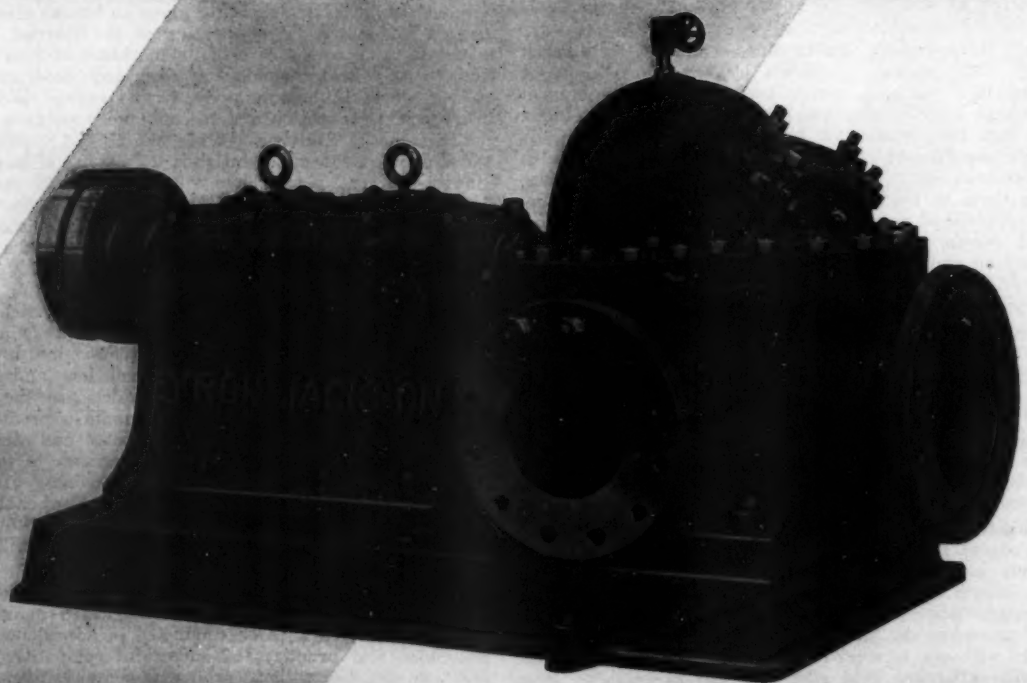
SINCE 1872

BYRON JACKSON PUMP CO.

Factories: BERKELEY, Los Angeles, Visalia, Calif.

Branches: CHICAGO and NEW YORK

San Francisco, Portland, Salt Lake, Dallas, Phoenix



BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE

the provisions of Public Law No. 914, enacted by the last Congress.

Simplified Practice—Advertising men are in a strategic position to promote programs of simplified practice says the Bureau of Standards. Simplification of a number of lines of goods manufactured is not a problem of the manufacturer alone, but also in his advertising, and it is important also to the distributor and consumer. In addition to the advertising man's interest in simplication, he can also participate professionally in the simplification movement. In fact, he occupies a major position in putting the elimination of waste program over the top. A greater concentration, through advertising, of buying effort through simplified lines will hasten the day when the ultimate objective will be gained and that is reduced prices, higher wages, and ever increasing higher standards of living. Consumers provide the markets—manufacturers and distributors supply them. It is estimated that about 25 per cent of the lines now manufactured would adequately serve the trade, and this is all simply a matter of consumer education through advertising. Consumers are influenced by advertising matter appearing in the daily newspapers, magazines and trade papers. If copy writers would include simplification in their copy layout, the printed word would be carried to the great host of individual purchasers as well as industrial purchasing agents to concentrate their purchasing on simplified lines.

The Tariff Program—Revision of the tariff to be made at the extra session of the 71st Congress, while it will be based on consideration of the problem as a whole, probably will not result in material changes in a very large proportion of the items included in the existing law, according to political leaders in Congress. Every article and every industry making its case before the House Committee on Ways and Means will doubtless be accorded adequate protection, the revisions will be governed in large part by adhering as closely as possible to a line accurately measuring the need of protection.

Of course, a general overhauling of rates is not expected to take place in the revision of the Tariff Act of 1922, and a general increase all along the line will be frowned upon, but industries that make a good case will unquestionably receive proper consideration in the new bill. House approval of the new tariff bill is predicted by May.

Substitution of American for foreign valuation as the basis for tariff rates, has been urged by a group of manufacturers, i. e., to apply the ad valorem rates of the new tariff act to some domestic base instead of to the foreign value or export price. No justification is seen for the continued retention of the foreign valuation base when every domestic consideration demands otherwise. Foreign value, as the duty base for our ad valorem rates, allows the foreign producer practically to name the base to which our tariff rates shall apply, thereby removing from our own customs authorities the determination of the amount of duty to be paid and permitting the foreign producer to fix the duty that he has to pay to put his goods or merchandise into the United States in competition with American productive enterprise and American labor.

Meeting of Chamber of Commerce—The Seventeenth Annual Meeting of the U. S. Chamber of Commerce will be held in Washington April 29-May 3d. Appraisal of current economic problems and their effect on future business development will be made. Subjects in the program include the future of small business, credit supply and the stock market, the making of a tariff, trade practice conferences, industrial expansion and manufacturing capacity, mass merchandising, employer-employee relations, etc.

Labor Injunction Bill—Senator Shipstead is determined to reintroduce his bill (S. 1482) at the 71st Congress to amend the judicial code and to define the jurisdiction of equity courts to prevent labor injunctions, known as anti-injunction bill.

Recent Customs Decisions—Surface-decorated paper was claimed dutiable at 4½c per pound under par. 1305 of the tariff act of 1922, and in a recent decision by the Customs Court the contention was allowed (No. 293546-G). In another case sheets of surface-coated paper used for stencil work, classified at 5c per pound and 20 per cent ad valorem under par. 1305, was claimed dutiable at 5c per pound and 15 per cent ad valorem under the same paragraph. The court also allowed this protest (No. 215961-G-74646).

The U. S. Customs Courteau has abolished the Comparative Valuation Report Bureau and established in lieu thereof a Customs Information Exchange, in T. D. 43246, to be used as a means of collecting, and distributing from a common center, data concerning values and advisory classifications and such other information as will assist customer officers and importers in the appraisement and classification of merchandise imported.

Pieces of paper, cut to definite sizes and having thereon colored pictures printed otherwise than by the engraving process, the whole ready for immediate use, as imported, in making paper box covers, are properly dutiable at 35 per cent ad valorem under par. 1313 as manufactures of paper not specially provided for, rather than at 25 per cent under par. 1310 as engravings, according to a recent decision of the U. S. Court of Customs Appeals (T. D. 43247).

Surface coated wrapping paper, classified at 5c per pound and 15 per cent ad valorem under par. 1305, was claimed dutiable as wrapping paper at 30 per cent under par. 1309, and the Customs Court sustained the protest in a recent decision (No. 76286-G).

Interstate Commerce Rulings—In Albany Perforated Wrapping Paper Co. vs. Atlantic Coast Line R. R., the Interstate Commerce Commission in a recent decision (No. 20760) held that third-class rates on toilet paper and paper towels, in less than carloads, from Albany, N. Y. to Lynchburg, Va., were not unreasonable or otherwise unlawful, and dismissed the complaint. The petitioner contended that the third-class less-than-carload rate charged was unreasonable and in violation of the long-and-short haul clause of section 4 of the Interstate Commerce Act, and asked that a reasonable rate be prescribed for the future.

The proposal to raise rates on wood pulp was suspended in a recent ruling of the Commission (I & S Docket No. 3256) until Oct. 14, 1929. The suspended schedule proposes increased rates on wood pulp in carloads from producing points in Maine to destinations in Northern New York.

In Northwest Paper Co. vs. Chicago, Milwaukee & St. Paul Ry., No. 18775, the commission reaffirmed its former findings that the rate on rosin size, in carloads, from North Milwaukee, Wis. to Cloquet, Minn., was unreasonable, and reparation was awarded.

Rates charged on carload shipments of pulpwood from points in Ontario to Lockport, N. Y., were not shown to have been in violation of section 4 of the act, and the complaint was dismissed in another decision. (No. 20117).

Sixth-class rates applicable to imported wood pulp, in carloads, from Boston, Mass., and from Baltimore, Md., to Fish House, N. J., were found not unreasonable in another decision and the complaint was dismissed (No. 20521).

Patent Squabbles—An apparatus for separating paper cups was held to be a patentable device in a recent dicision of the Board of Appeals of the Patent Office (No. 1472) in ex parte Reifsnyder. A paper drinking cup was also held a patentable novelty in another decision in the same case (No. 1498), being a paper drinking cup with the inner wall alone impregnated with waterproof coating so that there was no visible coating on the outside or rim, the coating used having a high melting point to permit use of the cup for serving hot liquids.

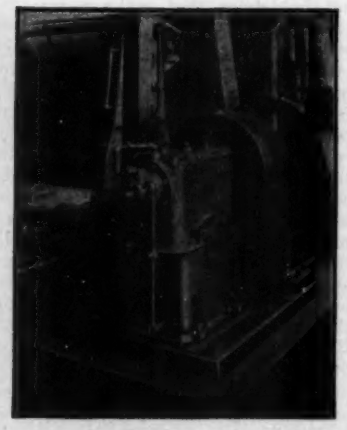
Simplified Practice in Paper Industry—The requirements of management have become increasingly exacting and management can no longer rely upon unsupported personal judgment of "hunch", says the Department of Commerce. Information that is comprehensive, accurate and timely, must be available to enable the carrying out of the programs and to measure performance. Among the problems to be met is the elimination of avoidable waste. This is being done through the application of the principles of simplification and standardization. A list of the simplified practice recommendations developed by industry may be secured upon request from the department. More than 100 simplifications have been developed to date. Considerable savings have been effected in paper products, milk bottle caps, asbestos mill board sizes and thicknesses, warehouse forms, commercial forms, paper grocers' bags, boxboard thicknesses,

Specialized Production
assures superior performance

The high position held by Cleveland Worm Gear Reduction Units in the esteem of engineers is due largely to the fact that every manufacturing facility at *Cleveland's* command is employed solely in the production of better worm gearing.

Since *Cleveland* is the only plant in the world of which this can be said, it is natural that *Cleveland* should lead in advanced design. It is a matter of record that practically every major improvement in industrial worm gear design made in the past 15 years originated in *Cleveland's* great plant laboratory.

Features responsible for *Cleveland's* superior performance today—such as anti-friction radial and thrust bearings, special alloy gears, standard types and sizes for any application—all are the direct result of specialized manufacture—a policy that reaches its highest expression in Cleveland Worm Gear Reduction Units.



Cleveland Worm Gear Reduction Unit driving calender rolls in large Eastern board mill.

CLEVELAND
WORM & GEAR COMPANY

3270 East 80th Street, Cleveland, Ohio

"CLEVELAND WORM GEARING . . . THE ULTIMATE DRIVE"

tissue paper (roll and sheet tissue), bank checks, salt packages, composition books, etc.

Pulp Wood Resources in Alaska—Southeastern Alaska has pulp timber resources capable of furnishing an annual manufacture of about one million tons of newsprint or one-quarter of the present consumption in this country, says the Forest Service. Most of the land containing the pulpwood is in national forests administered by this service.

Growing Pulpwood—A forestry experiment under way for more than 20 years now has demonstrated an effective means of increasing the growth of pulpwood, says the forest service. As a result of the far-sightedness of the forester who started this experiment in 1907, pulpwood operators in the Northeast now can have some preliminary information on the yields to be expected through the practice of girdling hardwoods which are overtopping the spruce. It is found that volume growth on the heavily girdled plot has been more than five times as rapid as on the plot which was not girdled. On the moderately girdled plot, growth was three times as rapid.

Investigation of Newsprint Paper—The Federal Trade Commission has accepted Senate Resolution 337, calling for an investigation of the practices of manufacturers and distributors of newsprint paper. The inquiry will be carried on in strict compliance with the terms of the resolution. The commission will employ and rely on all powers legally available to it, whether contained in its organic act or elsewhere. The investigation is to determine the tendency to create a monopoly in the supplying of newsprint paper to publishers of small daily and weekly newspapers.

National Wholesale Conference—The National Wholesale Conference will hold its final meeting in Washington April 26 and 27, to outline the results of the complete study of wholesaling in the changing mechanism of distribution and the problems it is encountering, with a view to formulating a panacea or cure for many of the ills of present day wholesaling.

Industrial Purchases in Cleveland—Ninety-one firms in the paper, printing and allied industries in Cleveland, with an individual volume of at least $100,000, reported industrial purchases in a total of $15,317,830, according to a report just made available by the Census Bureau. Semi-finished materials represented 84.08 per cent of industrial purchases, equipment, etc. represented 10.36 per cent, and mill supplies, fuel, packing materials 5.56 per cent. Paper and paper boards made up 87.16 per cent of semi-finished materials purchased.

Foreign Notes of Interest—Italy is now the world's seventh largest paper producer.

The Scottish paper industry is reported as being well employed.

A decrease is noted in German pulp and paper exports last year.

Japanese paper production and sales are higher, and ran considerably over the 1927 figures for last year.

A satisfactory year is reported by the Netherlands paper trade.

Canadian pulp and paper exports are on the increase.

The Finnish Chemical pulp industry reported a record year for 1928 both in output and in foreign trade.

The Philippine paper market is reported as still highly and keenly competitive, both for printing and wrapping paper.

The Swedish pulp and paper market is reported as steady with a feeling of general confidence in the increase.

Canadian newsprint production was lower last month than the preceding month.

Wholesale Prices—A slight decline in the general level of wholesale prices is reported for February to March and with 1926 as the basis of 100 the following changes are shown:

	Mar. 1928	Feb. 1929	Mar. 1929	Purchasing power of dollar in March, 1929
Paper and paper Products ..... including pulp.	90.9	87.8	87.8	113.9

Employment and Pay-Rolls—Employment increased 1.9 per cent in March as compared with February, and pay-roll totals increased 6.9 per cent, according to the Bureau of Labor Statistics. With 1926 as the basis of 100 the following changes are shown:

	Employment			Pay-roll totals		
	1928	1929		1928	1929	
	Mar.	Feb.	Mar.	Mar.	Feb.	Mar.
Paper and pulp	94.6	94.5	95.0	95.8	95.7	98.5
Paper boxes	93.3	92.2	92.6	95.2	97.4	99.1

◆ PACIFIC COAST ◆

WASHINGTON

Merged Companies to Build Pulp Mill

A pulp mill costing about $3,000,000 is to be erected at Everett, as the result of a merger of $12,000,000 worth of property including pulp mill, railroad and lumber interests, and the formation of a holding company for the consolidated units, the Puget Sound Pulp and Timber Company, a Delaware Corporation. H. W. Bunker, president of the Coos Bay Lumber Company, is chairman of the board of directors of the holding company which has a $12,000,000 capital, consisting of half common and half preferred stock with no bonds.

Included in the united properties are: San Juan Pulp and Timber company which operates a 90-ton pulp mill at Bellingham; the Fidalgo Pulp Manufacturing Co., operating a 60-ton pulp mill at Anacortes; the Skagit Valley Lumber Co., at Clear Lake; the Rucker Bros. logging and lumber operations at Lake Stevens; the Puget Sound and Cascade Railway Co. owning 50 miles of track in Skagit county; the Hartford and Eastern Railway company with tracks from Hartford to Monte Cristo in Snohomish county.

Ossian Anderson, president of the San Juan and Fidalgo pulp companies, is president of the newly formed corporation; P. F. Knight, vice-president and manager of the Mutual Lumber Company is first vice-president; William Morrison, vice-president of the Morrison Mill Company is vice-president; H. R. Lawton, vice-president of Pierce, Fair Company, is secretary; and Neil Sexton is treasurer.

Others who are directors in the corporation are: W. N. Winter, president of the West Coast Telephone Company; U. M. Dickey, president of the Consolidated Dairy Products company; R. H. Miller, director of the National Bank of Commerce; H. M. Robbins, president of the Clark Nickerson Lumber Company; O. M. Green, president of the Olympia National Bank; Peter Schmidt, president of the Schmidt Estate company.

Construction of the pulp mill at Everett which is to start immediately is the first unit of several projected by the corporation directors, it is reported.

Indications that the Zellerbach interests will erect a pulp and paper mill at Everett were reported last month when K. C. Fosse, representing the International Wood & Sulphite company, a Zellerbach subsidiary, obtained a 60-day option on 39 acres of land on the Snohomish river each of the Canyon Lumber Co. Included in the deal was a contract with the lumber company for the entire waste from the sawmill for the next 20 years, starting October 1, 1929. It was reported that the mill would cost about $5,000,000. The city of Everett is making plans for a $2,000,000 industrial water system.

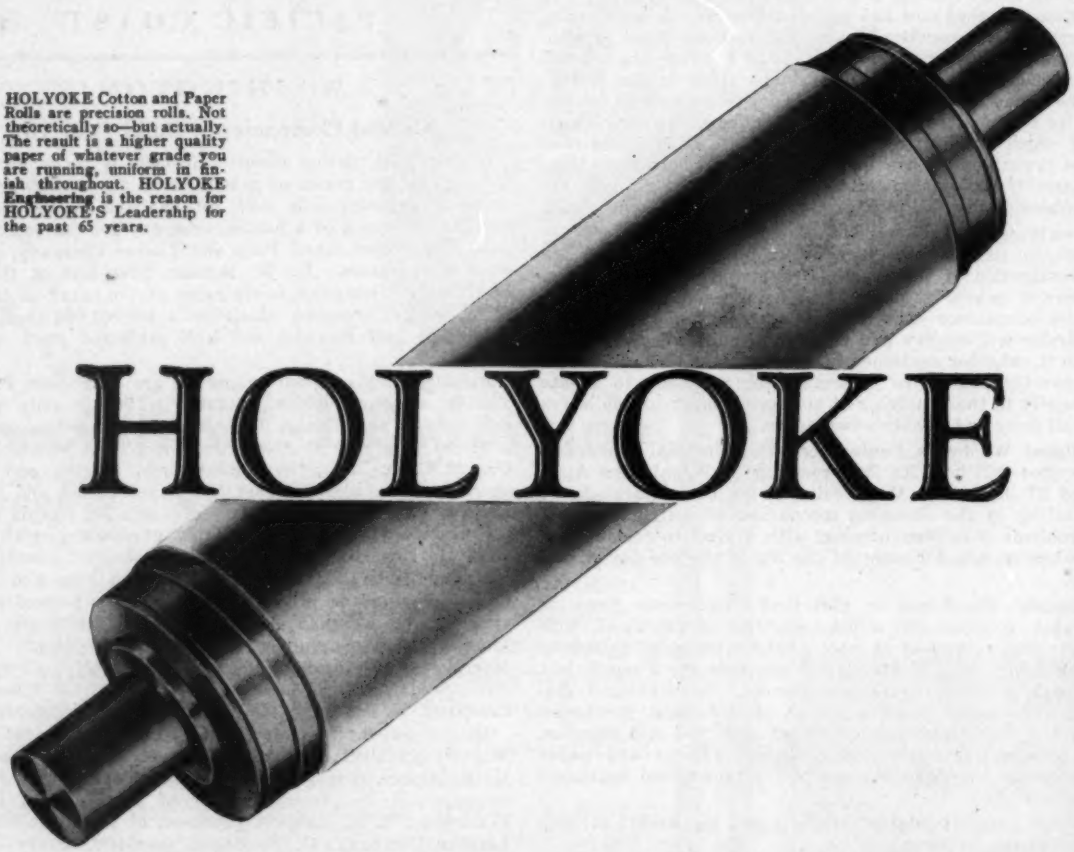
Game Commission Protest Against Stream Pollution

The Grays Harbor County game commission on April 3 ordered Game Warden Jack Winslow to start proceedings against the Grays Harbor Pulp Co. to stop acid pollution of Grays Harbor and tributary streams.

Investigators who reported at the meeting of the commissioners stated that efforts have been made for some time to secure the elimination of the acid danger; that this can easily be done and is done in other places where pulp is produced. Examinations and laboratory tests were made by

LEADERSHIP

HOLYOKE Cotton and Paper Rolls are precision rolls. Not theoretically so—but actually. The result is a higher quality paper of whatever grade you are running, uniform in finish throughout. HOLYOKE Engineering is the reason for HOLYOKE'S Leadership for the past 65 years.



HOLYOKE

HOLYOKE and HOLYOKE MACHINE COMPANY form a guarantee of Superior Workmanship and Performance. Long Engineering experience has built unquestioned excellence into every HOLYOKE MACHINE. HOLYOKE'S Precision finish, rugged construction, and fewer repairs make HOLYOKE Rolls the best buy for the long run and the perfect run.

Write HOLYOKE MACHINE COMPANY, HOLYOKE, MASS., Maufacturers of Super Calenders, Platers, Cotton, and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

Glen D. Sheely, of Hoquiam, and John Lovelass for the commission, in which it was shown that the acid content of Grays Harbor is increasingly great and dangerous to all fish. It was declared that the danger to trout in the summer will be much greater because as the water becomes lower the acid contraction will be greater.

The findings of the commission's experts were later referred to the State Health Department which made an investigation and returned a contrary report. This was discounted, however, by the commission because of the obvious ill effects on fish now being taken.

An auxiliary water supply line from the Wishkah for the Grays Harbor Pulp and Paper Co. in the city of Hoquiam has been started by the Parker-Schram Co., of Portland. The new supply line will be used as an auxiliary to the company's present project on the East Hoquiam river during the dry season and will have a daily capacity of from 10,000,000 to 15,000,000 gallons of water. It will be completed and ready for operation by June, just in advance of the dry season.

Twenty-two readi-cut houses have been ordered by the Crown-Willamette Paper Co. and will be assembled by the first of May at its Cathlamet, Wash. logging camp to provide housing for the employees, A. A. Patterson, general manager of the Aladdin Co. announced recently. Each of the houses will be completely equipped and will have bathroom and plumbing fixtures.

Roy Young, formerly located at the Camas plant of the Crown-Willamette Paper Co., has been transferred recently from the Portland office back to the Camas plant.

John T. Gamble has resigned as general superintendent of the Camas plant of the Crown-Willamette Paper Co., to take a position with the Union Bag and Paper Co., at Hudson, N. Y.

The Northwest Power and Manufacturing Co., a Zellerbach subsidiary that furnishes power to the Washington Pulp and Paper Corp. mill from two dams, one on the lower Elwha river at Aldwell canyon and the other at Glines Canyon, 16 miles southwest of Port Angeles has purchased the Rica canyon site on the Elwha river where a third power dam will be constructed shortly.

A. Zimmerman, formerly with Charles Boldt paper mills at New Iberia, La., and later with John C. Fleming Co., paper manufacturers at Dallas, Texas, has taken a position as superintendent of the Pacific Straw Paper and Board Co., at Longview, Wash.

The Columbia River Paper Mills at Vancouver, has installed on the second floor of the new addition to the plant a Mammoth High Density beater.

OREGON

Samuel Connell, treasurer of the Northwest Pulp and Paper Company of Portland for a number of years, died at his home on March 7 and funeral services were held on the Saturday following. Mr. Connell, was 64 years old, having been born in Huron county, Ontario, Canada on September 12, 1864. He came to Portland in 1873 and was educated in the local schools. Prior to becoming associated with the Northwest Pulp and Paper mill, he was connected with the sash and door business.

A petition for the vacancy of Harrison street on the west side water front in Portland was filed during March with the city commission by the Federal Paper & Board Mills and was to be reported on at the meeting of the commission on April 17. Plans, which have been under way since last fall by the Federal Paper & Board Mills of which Max Goldberg is president and I. Goldberg is secretary, is to erect a plant with a capacity of 30 tons of paper board daily. The organization has selected the site on Harrison street because of its water and rail facilities and plans to start construction in a short time providing the city council grants its petition.

Mervyn G. Dunnagan has joined the Pacific Northwest Paper Co. of Portland as advertising and sales promotion manager. Mr. Dunnagan recently resigned as account executive of Botsford-Constantine Co., advertising agency in Portland.

The St. Helens Pulp and Paper Co. began operating its new bag factory about the first of March, individual machines turning out from 7500 to 13,000 bags daily. Three carloads of machinery from the Emoryville, Calif. plant which is being dismantled, arrived in St. Helens during March, and the remainder will be sent to St. Helens as soon as sufficient production is attained.

CALIFORNIA

Crown Zellerbach Reports Gain

Net earnings for Crown Zellerbach corporation and subsidiaries for the three quarters ending January 31, 1929, increased 32 cents per share over the corresponding months of a year ago. At that time, earnings per share of common stock amounted to $1.16, compared with the recent report of $1.48. Earnings for the past three quarters are at the annual rate of $1.99 per share. This compares with $1.55 a year ago.

Gross profits for the third quarter were $2,910,579, a gain of 13 per cent over the third quarter of last year. After all deductions and reserves, the balances available for dividends was $990,654, a gain of 14 per cent over the previous third quarter.

OHIO

Supers of Miami Valley Division Meet

The Miami Valley Division of the American Pulp and Paper Mill Superintendents Association held its regular meeting at the Gables in Middletown, Ohio, March 9, 1929.

A most interesting paper on "Comments on the Design and Operation of Paper Pulp Plants" was read by E. G. Milham, technical director, Bryant Paper Co., Kalamazoo, Mich. Mr. Milham covered all of the operations in the manufacture of paper from waste paper pulp, and in the introduction of his subject he brought out the importance of conservation, mentioning that two million tons of waste paper were used in the United States in 1928 for the manufacture of paper. Assuming that a cord of wood will make a ton of paper, this represents a saving of about two million cords of wood, or five million trees per year.

T. E. Wright, of the Link-Belt Company, addressed the meeting on the subject, "Conveyors and Silent Chain Drives and Their Application to Paper Mills." Mr. Wright exhibited samples of many kinds of chain and explained the particular use of each kind.

The Congressional Committee composed of Allen T. Treadway of Massachusetts, Carl C. Shindblom of Illinois and Fred M. Davenport of New York, who visited Holyoke during their investigation of tariff needs of New England industry, returned to Washington firm in the conviction that it will be easy to satisfy the fine paper trade in so far as tariff changes are concerned as those desired are chiefly in the nature of adjustments and changes in classifications such as in cover papers, for instance, rather than any actual increase in the rates.

The next meeting of the Paperboard Industries Association will be held at the Palmer House, Chicago, May 22 and 23, 1929.

A clean motor will last longer and run with fewer interruptions than a dirty one. The simplest way therefore to lessen motor maintenance is to keep motors clean without cleaning. That's just what you accomplish with these enclosed fan-cooled Reliance Motors. You can mount the motors in dirty places and be sure that nothing will get in to injure the windings or clog the air gaps.

Savings in inspection and repairs alone, soon take care of the extra cost, and your motors will show a better record for steady operation.

Bulletin 103 gives details.

RELIANCE ELECTRIC & ENGINEERING CO.
1058 Ivanhoe Rd., Cleveland, Ohio

Branches: Birmingham, Boston, Buffalo, Chicago, Cincinnati, Detroit, New York, Philadelphia, Pittsburgh, St. Louis.

RELIANCE A-C D-C MOTORS

Canadian News

Newsprint Crisis Over

As had been expected, no official announcement has been forthcoming from the Canadian newsprint companies of an agreement regarding the price of newsprint and the distribution of orders, but the situation was very plainly stated by Premier Taschereau in the Quebec Legislature when he announced that the newsprint crisis was over, and that the price has been fixed at about $55.20 a ton instead of $50 as had been feared in some quarters, with danger that it might drop to $48.

When it was first announced that a satisfactory agreement had been reached concerning the newsprint situation, International Paper officially announced that it was totally unaware of any such agreement, and that it certainly was not a party to it. A few days later it announced a revised list of newsprint prices. The new prices were on a delivered basis, that is, including freight, and while the actual mill level is difficult to figure, it is apparent that the price is very close to the $55.20 per ton which had been intimated in well-posted quarters. The company has also officially announced that the contract into which it entered with the Hearst newspaper interests is for a period of five years from January 1, 1929, with no rebates or commissions either directly or indirectly.

It is stated that Professor M. C. Boswell, of the Faculty of Applied Science, University of Toronto, has discovered a catalytic process for the production of elementary sulphur from the sulphur dioxide of smelter gases. If the process can be successfully applied commercially, it may mean that the $3,000,000 worth of sulphur at present consumed in Canada, most of it by the pulp and paper industry, may be obtained right here in the country instead of being imported from the United States as at present. Professor Boswell has forwarded a report of his investigation to the National Research Council at Ottawa, under whose auspices the work was carried out.

Growing Importance of Pulp and Paper Industry

In spite of certain difficulties in connection with the marketing newsprint, which are now being satisfactorily overcome, the pulp and paper industry in Canada is making satisfactory progress toward the more complete utilization in Canada of our natural resources of pulpwood, according to a report just compiled by the Dominion of Canada Bureau of Statistics. While the annual exportation from Canada to the United States of over 1,000,000 cords of raw or unmanufactured pulpwood and the production in Canadian paper mills of a preponderance of comparatively cheap newsprint constitute a theoretical economic loss, the industry as a whole shows a strong tendency toward the more profitable manufacture of raw materials within the country. This is clearly indicated by the increased purchases of pulpwood by Canadian mills, the increasing production of pulp in Canada, the decreasing exportation of pulp for further manufacture in other countries, the increase in the proportion of pulp retained in Canada for further manufacture into paper in Canadian paper mills, and the increases in the production, the sale in Canada and the exportation of Canadian paper.

In the addition of value to raw materials by further manufacture the pulp and paper industry is the most important manufacturing industry in Canada today. It heads the lists in gross and net value of production as well as in wage and salary distribution. It comes second in capital investment and total number of empolyees. Canada now manufactures more than a third of the world's supply of newsprint, exceeding the 1927 production of the United States, our nearest competitor, by over 600,000 tons, while for 1928 the lead has been increased to very nearly 1,000,000 tons. Canada's exports of this commodity are more than eight times as great as those of Germany, her nearest competitor, and exceed the exports of the rest of the world combined.

In spite of adverse foreign tariffs and a comparatively restricted home market, the manufacture of fine papers and paper other than newsprint in Canada is developing, and Canadian mills are now equipped to manufacture practically every variety of paper used in the country at the present time.

According to a return recently tabled in the House of Commons at Ottawa, the value of book and magazine paper imported into Canada between March 1, 1928, when tariff schedule No. 1060 came into force, and January 31 last, was $826,683.

❖ QUEBEC ❖

Lake St. John Mill Operates Efficiently

The annual report of Lake St. John Power and Paper Co. will not be ready for a few weeks, but from official advice it is understood that the company will be able to show their bonds and debenture interest covered by a good margin in the last fiscal year, which ended February 28th, 1929. Excellent results are being obtained by the mill at Dolbeau, which was designed to produce 220 tons of newsprint a day, but which has been showing such a high operating efficiency that on three successive days last month it produced 270, 269 and 275 tons of paper. While the outlook for the paper industry calls for a period of conservatism in new construction and economical operation of its present plants, Lake St. John, due to its low cost, is in a strong position.

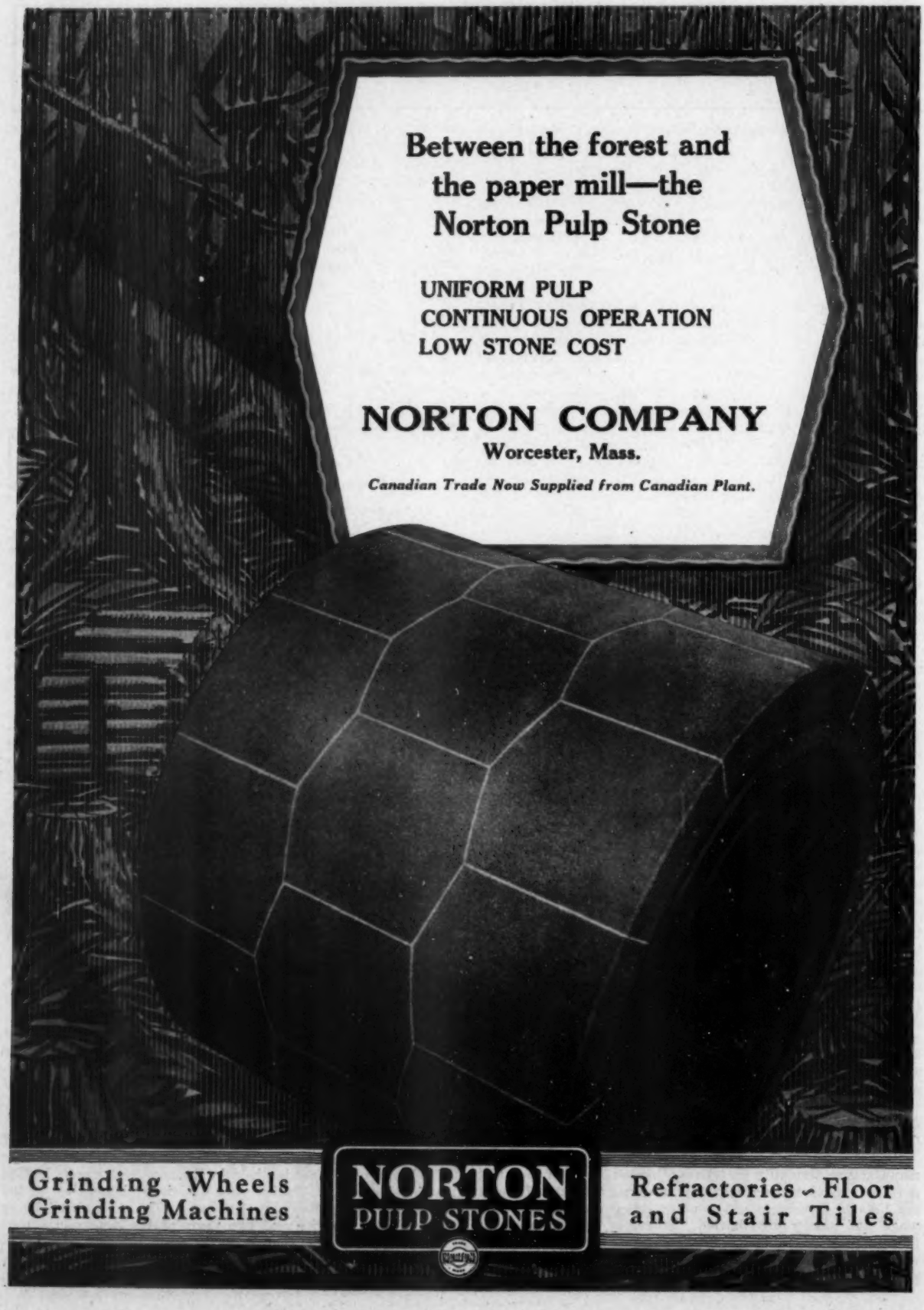
The company is constructing a hydroelectric power plant of 20,000 horsepower on one of its power sites adjoining its paper mill. The company owns two power sites, with a combined capacity of 50,000 horsepower. The output of this plant will be used entirely for the purposes of the company.

New Brompton Board

In view of the change of ownership of control in the company, the entire board of directors of the Brompton Pulp and Paper Co. recently placed their resignations in the hands of the new interests. A special meeting was held recently to deal with the matter, and the board is now as follows: J. A. Bothwell, East Angus, president; R. W. Steele, Montreal, vice-president; G. R. Cottrelle, Toronto; C. G. Greenshields, Montreal; J. E. McCrae, Sherbrooke; Ernest Rossiter, Montreal; E. A. Wallberg, Toronto; A. F. White, Toronto.

As now constituted, the board is representative of the shareholders. The new board expressed its regret at the severance of several very old connections with the company, and its appreciation of the active and loyal service extended to the company for many years by the retiring directors.

Between 50 and 60 delegates to the annual convention of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers of America, held in Montreal last month, headed by president J. P. Burke, paid a visit of inspection to the Pulp and Paper Research Institute. The following officers were elected for the next two years at the close of the convention: President, John P. Burke, Fort Edward; vice-presidents, Maurice Labelle, Ottawa; H. W. Sullivan, Worcester, Mass.; J. W. Taylor, Topsham, Me.; William H. Burnell,


Between the forest and
the paper mill—the
Norton Pulp Stone
UNIFORM PULP
CONTINUOUS OPERATION
LOW STONE COST
NORTON COMPANY
Worcester, Mass.
Canadian Trade Now Supplied from Canadian Plant.
Grinding Wheels
Grinding Machines
NORTON
PULP STONES
Refractories - Floor
and Stair Tiles

Espanola, Ont.; Reinhart Henke, Wisconsin Rapids, Wis.; and A. C. Krueger, International Falls, Minn.; treasurer, B. Doody, Palmer; auditor, George Brooks, Franklin, N. H.

Special Pulpwood Carriers Launched

There will be launched soon from the Davie Shipbuilding Co.'s shipyard at Lauzon a steel vessel which has been specially designed for the carriage of pulpwood and to suit the shallow draft conditions obtained at Sault au Mouton and Donnacona, Que. This is being duplicated in another shipyard at Montmagny and is being built by Price Bros. The latter boat will be a wooden one, but in other details it follows the lines of the steel vessel.

What makes these boats particularly noteworthy is the fact that an electrically-driven conveyor is being built into the bottom of them and leading out through a water-tight tube over the vessel's stem. This rather novel arrangement, a development of the Donnacona company's engineers, will greatly facilitate pulpwood discharge and is expected to decrease unloading time and expense very considerably.

These vessels are not in the nature of an experiment, for a season's trial has been given to their type. Last year Canadian Vickers built two such crafts which are propelled by two oil engines of 100 horsepower each. The loading and discharging arrangements were provided on the decks and comprised chutes for loading and movable conveyors for discharging. All these vessels were designed by Walter Lambert, of Montreal.

Canipco News

There were recently brought before the Legislature two bills, one of the township of Low to provide a fixed valuation for the property of the Gatineau Power Co. at $550,000, and the other of the township of Deholm to provide for a fixed taxation of $200,000. The rate payers had approved in each case of the commutation, and made it for a period of 20 years; but the Private Bills Committee cut the term to 10 years. In the debate on these two bills, Canadian International Paper Co. was selected as a target by some of the Conservative members, and this brought about a very clear and forceful statement by Premier Taschereau, the gist of whose remarks were as follows: the newsprint crisis is now a settled matter, owing to the intervention of the governments of Ontario and Quebec, and this will mean another $15,000,000 for Quebec. He added that the provincial Governments had not gone down on their knees to the Americans, as had been claimed, but had told the Americans that they must respect the laws of the provinces and make the best possible arrangement. As far as International Paper is concerned, the Government found much good will, even better than it found with some Canadian companies, and the arrangement that it has been possible to make was due to the intervention of International Paper.

Canadian International Paper is enlarging its Kipawa mill from 75,000 tons to 100,000 tons a year of rayon sulphite wood cellulose. Located on the Ottawa River 230 miles above the City of Ottawa, Kipawa mill receives its wood from timberland reserves aggregating 5,200 square miles, and its power from the Kipawa plant of Gatineau Power Co., controlled by Canadian Hydro-Electric Corp., a subsidiary of International Paper and Power Co. A large proportion of the total world's consumption of wood cellulose by manufacturers of viscose rayon is supplied from Kipawa mill, one of the original Riordon properties. Its expansion is necessiated by the continually increasing demand for its product.

Earl E. Shaw, who has occupied the position of Chief Forestry Engineer for the past five years of a large section of Eastern Canada for Canadian International Paper with headquarters in Three-Rivers, left last month for Gaspé Harbour, having been promoted to the managership of the company's mills at that point.

Ivar Fogh, senior assistant to Earl E. Shaw, has been promoted to the position of manager of the forestry department of the company for the Three-Rivers District, a promotion which is well deserved. Mr. Fogh, who is a native of Denmark has been in Canada the past seven or eight years, the last five years of which he has spent in the service of the Canadian International Paper Co.

The first annual report of the Canadian Hydro-Electric Corporation, Ltd., covering the year ended December 31, 1928, was published last month. This company controls the Gatineau Power Co., Gatineau Electric Light Co. and the St. John River Power Co., and is a subsidiary of International Power and Paper Co. Gross revenue for the year is shown at $4,367,393, from which is deducted expenses at $874,383, interest at $2,272,810, discount on funded debt at $146,708, depreciation at $297,426, and preferred dividends at $750,000, leaving a surplus of $26,065. Previous surplus was brought forward at $6,816,669, making a total surplus of $6,842,734.

Percy Neil has been promoted superintendent of the sulphite department of Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec, succeeding L. Groegaard who has returned to Norway.

ONTARIO

The pulp and paper industry and the printing trades are interested in the development of the Research Foundation in Ontario, which was brought to the attention of the Ontario Legislature last month when the Hon. George S. Henry, in the absence of Premier Ferguson, introduced an amendment to the act which provided for the foundation. The minister explained that last year's provision was that the Province subscribe $1,000,000 if the same amount was subscribed by private interests. There had been so much enthusiasm among those in industry, however, that the fund had been oversubscribed and the amendment was to provide for an increase of the amount up to $2,500,000 on the same terms as last year.

Workmen's Compensation Explained

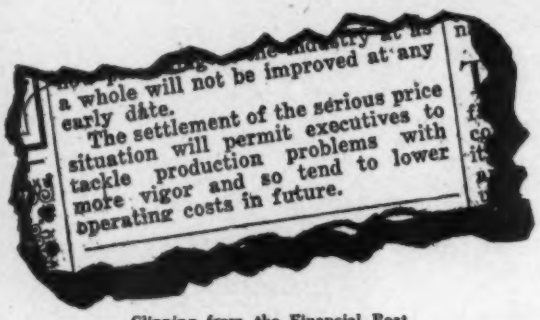
The Eastern Group of the Ontario Pulp and Paper Makers' Safety Ass'n met at Ottawa on March 12 in the board room of the J. R. Booth Co. and listened to an able address by T. N. Dean, chief statistician of the Ontario Workmen's Compensation Board, who elucidated many features of the Act under which the Board operates. Among these were certain clauses affecting the pulp and paper industry in their application to both employers and workmen.

Mr. Dean's address was a clear exposition of the legal aspects of the Act, with particular reference to the benefits accruing thereunder and the responsibility of the employer and employee, while the importance of the employees and doctors furnishing full information and immediate reports in case of all accidents was stressed. He also expounded the principle of rehabilitation and pointed out certain cases where by united action the doctors and the Board could reduce the period of rehabilitation.

Rate payers of Thorold will shortly vote on the granting of fixed assessment for ten years of $10,000 to the Brantford Felt Roofing Co., of Brantford, which intends to carry on operations in the plant of the Superior Paper Mills, Ltd., which went out of business some months ago.

W. W. Cole, who was for twenty-five years associated with the Wm. Hamilton Manufacturing Co., Peterboro, has been appointed manager of the Canadian Barking Drum Co., Toronto, and has entered upon his new duties. Mr. Cole is well known to the pulp, paper and lumber industry, particularly in Eastern Canada, and has had a long and thorough experience in the handling of pulp and papermaking equipment.

The plant of the Great Lakes Paper Co., at Fort William, is showing great activity. The work of assembling the big 304-inch fourdrinier, the largest paper machine in the world,


a whole will not be improved at any early date.
The settlement of the serious price situation will permit executives to tackle production problems with more vigor and so tend to lower operating costs in future.

Clipping from the Financial Post
March 1, 1929

Your Steam Costs Alone Can Provide A Real Source For Needed Savings

In scores of mills facing a period of unfavorable market conditions, there exists real opportunities to effect needed savings without the least impairment of operating efficiency. This should be the objective of every plant executive and superintendent.

o o o o o

A little closer scrutiny of heating and ventilating methods and costs is more than likely to reveal excessive steam consumption and wasted heat that daily adds to the burdensome weight of operating expense.

The Briner Economizer has been installed in the most efficient machine rooms to insure maximum economy even during periods of capacity production for active markets. How much greater is its value at this time to the mill depending upon operating costs to offset the decline in profit?

o o o o o

The Briner Economizer's record of savings secured through full utilization of heat in waste vapor is a known fact. Surely it is worthy of every plant executive's earnest consideration at this particular time.

Installing Briner Economizer does not make necessary drastic alterations to your present equipment.

Investigate use of Briner Economizers in conjunction with Grinder Exhaust System.

Consulting our engineers regarding possibilities for saving in your plant puts you under no obligation.

J. O. ROSS ENGINEERING CORPORATION

206 W. Washington Street, CHICAGO — Main Office—30 E. 42nd Street, NEW YORK — 519 American Bank Bldg., PORTLAND, ORE.

ROSS ENGINEERING OF CANADA, LIMITED

NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

is proceeding, and A. T. McLellan, superintendent of construction, expects the machine to be in operation this month. It is hoped that the completion of the sulphite mill will synchronize with the starting up of the paper machine. The sulphite tower has been erected and the remainder of the building is being finished as speedily as possible.

Woods operations of the Laurentide-Ottawa Division of the Canada Power and Paper Corp. have progressed favorably this season, and the company is taking out about 35,000,000 feet, bush scale, largely of white pine. The logs will be cut at Pembroke by the company operating the mill purchased some time ago from the Edwards Lumber and Pulp Co.

Production Record at Great Lakes

Production at the plant of the Great Lakes Paper Co., Fort William, the newest of the Backus-Brooks units, is starting to live up to expectations. Production for March 7th and 8th was 151.1 and 144.7 tons, respectively. Inasmuch as there is only one machine in operation to date, the 264-inch Bagley and Sewall, the aforementioned production figures constitute new world's records for 24-hour production from a single machine. Considering the fact that this machine has not yet passed the 1000 foot per minute stage and has a rated mechanical speed of 1500 feet per minute, records that will set new marks in production tonnage may continually be expected from this unit.

M. J. Ashley, formerly assistant sulphite superintendent of the Minnesota and Ontario Paper Co., International Falls, Minn., arrived in Fort William last month to assume his new duties as superintendent of the sulphite plant of the Great Lakes Paper Co. Before leaving International Falls Mr. Ashley was guest at a farewell banquet given in his honor by the staff of the Minnesota and Ontario Paper Co., over 100 being present.

It is reported that a number of the former employees of the Fort William Paper Co.'s plant at Fort William, which lay idle for several months, have left to take up positions in a newsprint mill in Russia, on the understanding that the rate of wages for machine tenders and other papermakers is approximately 10 per cent higher than in Canada or the United States.

Abitibi Jottings

Clarence E. Jackson, manager of the mill of the Thunder Bay Paper Co., Port Arthur, which was recently purchased jointly by Abitibi and Canada Power and Paper Co. from Consolidated Water Power and Paper Co., has resigned that position in order to return to Consolidated Water Power and Paper Co. His position has been taken by W. J. Hussey, who had been manager of the Espanola mill for over fifteen years. Before his departure from Espanola, Mr. Hussey was tendered a banquet by the employees of the Espanola mill, in the course of which he was presented with a grandfather's clock. C. M. Belden has been appointed to succeed him at Espanola.

After a shut down which lasted for several months, the plant of the Fort William Paper Co., an Abitibi subsidiary, was started up again early last month. One of the two 85-ton newsprint machines was put into operation and it is hoped that the second one will be started up very soon.

John D. Coffin, formerly vice-president of Ste. Anne Paper Co. and Murray Bay Paper Co., has severed his connection with those companies and is now associated with the Hearst newspaper interests in New York City. In keeping with the policy of Abitibi Power and Paper Co., which owns the above companies, in recognizing the managers of their different divisons, R. O. Sternberger, manager of the Ste. Anne mill at Beaupré, Que., has been elected director and vice-president of both the Ste. Anne Paper Co. and the Murray Bay Paper Co.

A very successful safety rally was held at the Community Hall at Beaupré by the Safety-First Committee of the Ste. Anne paper mill. Mr. Gaboury secretary of the Province of Quebec Safety League, was the principal speaker, and several interesting and instructive films were shown. An attendance of over 300 crowded the hall and the committee was greatly pleased with the response to its efforts.

Hitherto, in Ontario, timber sales were carried out by one branch of the Department of Lands and Forests, while the Forestry Branch had charge of reforestation and protection of standing timber. Under the provisions of the Provincial Forests Act, the Forestry Branch will henceforth handle all sales of timber limits. The change, which is one of far-reaching importance, will be carried out by degrees in order that it may not seriously interfere with the smooth operation of the department. In making this change, Ontario falls in line with Quebec and other provinces, which for years have seen the wisdom of having the sale as well as the reproduction of timber come under the administration of skilled foresters.

Witchall and Son, Toronto, have been awarded the contract for the erection on University Ave., Toronto, of the new head office of Provincial Paper Ltd. The building will be erected to plans by Marani and Lawson, architects, of Toronto.

❖ MANITOBA ❖

Provincial Paper Sales Passes Into Western Hands

A business deal of considerable importance has just been consummated, whereby a newly-organized company, known as Mid-West Paper Sales, Ltd., has purchased the business of Provincial Paper Sales, Ltd., wholesale paper merchants with branches at Winnepeg, Calgary and Edmonton. For some three years past the control of Provincial Paper Sales has been in the hands of Eastern Canadian interests, and the business again returns into the ownership of Westerners, and those who have been active in the direction of the affairs of the business during the past number of years.

The personnel of the new company is well known to the printing, wholesale and retail trade throughout the provinces of Manitoba, Saskatchewan and Alberta. A. Clark Hunt, who has been general manager of Provincial, becomes president and general manager of the new company. The remaining officers are Herbert B. Kirby, vice-president and sales manager; Thomas Underwood, second vice-president; Richard Hillier, treasurer; Gilbert Garnett, secretary; Peter Christie, manager of the coarse paper division; W. J. Thompson, manager at Calgary, and George Hatch, manager at Edmonton.

❖ BRITISH COLUMBIA ❖

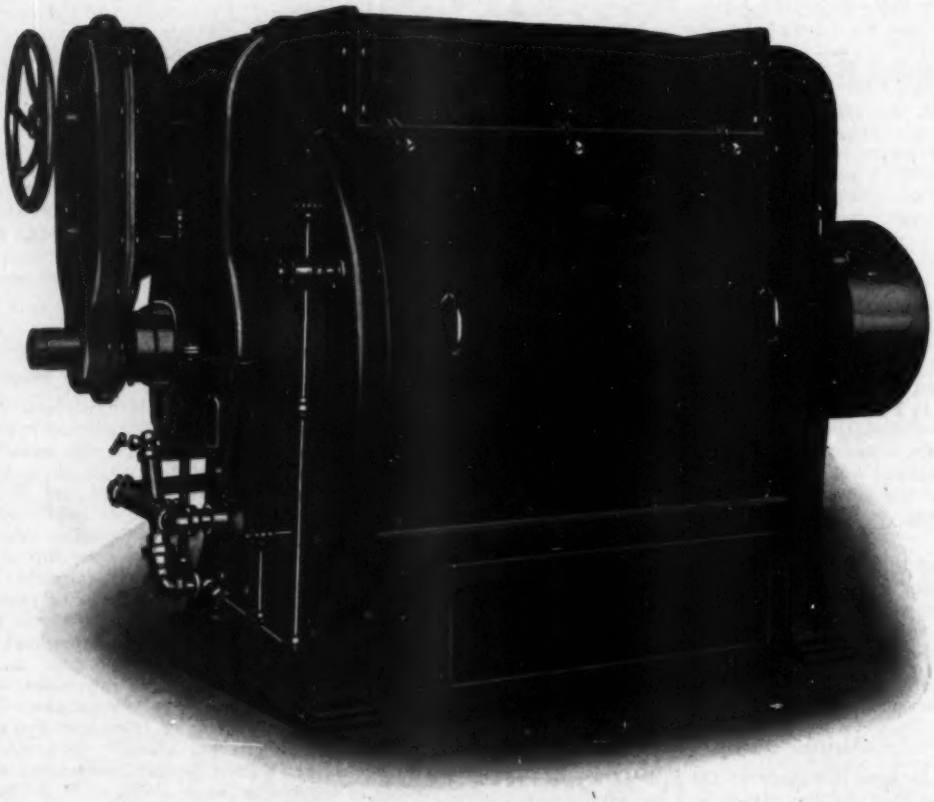
International Paper Buys B. C. Property

Intimations have been received that International Paper has purchased interests in Canadian Forest Products, Ltd., after "nibbling" at the property for the last three years. Vancouver members of the directorate admitted the strong possibility of the deal being made, and said that in such event development would be proceeded with involving an outlay of more than $15,000,000.

Canadian Forest Products, Ltd., was originally the Beaver Cover Lumber and Pulp Co. and in 1925 the assets were sold to the International Harvester Co. for approximately $6,000,000. The property included valuable timber, water power sites and pulpwood property. Following the purchase the company became known as the Canadian Forest Products, Ltd., with the International Harvester interests in control. Prior to the purchase by the Harvester people, the entire property of Beaver Cover, which is located on the east coast of Vancouver Island, 175 miles from Vancouver, had been lying idle for many years; and while it was announced at the time that early development of the property was projected due to the opening up of an extended market in Australia under the trade treaty, nothing further has been done.

REED-SPAFFORD PULP SCREEN

(Built in two sizes)



The REED-SPAFFORD PULP SCREEN is remarkably efficient. Its capacity is large and its power consumption is surprisingly low. Let us show you what a saving this screen means to you.

Our Paper and Pulp Machinery is CONSTANTLY IMPROVED

Improved Paper Machinery Co.

Nashua, N. H., U. S. A.

SHERBROOKE MACHINERY CO., Limited

Sherbrooke, Quebec, Canada

B. C. Pulp and Paper Earnings Steady

Despite the unfavorable conditions which surrounded the newsprint industry in general during the last twelve months, the third annual report of the British Columbia Pulp and Paper Co., covering the fiscal year ended December 31, 1928, shows earnings fairly well maintained. After payment of all charges including dividend on the preferred stock, the company had a surplus for the year of $3,239, as compared with $9,036 in the preceding year.

Fast Progress at Port Mellon

With 200 feet of its deep sea wharf completed and a large gang of workmen busily engaged in construction work and renovation of old buildings, Port Mellon, the site of the Vancouver Kraft Co.'s 100-ton pulp mill, is entering the first phase of its $1,500,000 development program. The steamer Heffron, the first deep sea vessel to call at the new plant, recently docked at Port Mellon to discharge a cargo of machinery, bricks and other material to be used in the construction work. The dock now under construction by the Vancouver Pile Driving Co. will be 600 feet long when completed. There will also be an assembly yard and a platform for a sawmill which will have a daily capacity of more than 160,000 feet board measure.

The Port Mellon paper mill was built more than twenty years ago, but has been shut down for many years because, it is said, its machinery was not efficient enough to compete with the modern equipment of mills built later. There are over 120 men on the job, and more are to be taken on shortly, it is expected. The pulp mill is expected to be completed by October. The Columbia River Paper Co., of Portland, Ore., is the parent company of the Vancouver Kraft Co., and the product of the Port Mellon mill will be disposed of entirely to paper mills of the west coast of the United States. Only kraft pulp will be manufactured, in addition to export lumber.

Mills Handicapped by Water Shortage

Pulp and paper mills along the British Columbia coast have been experiencing a trying-time, as the result of a possible power famine. Curtailment of operations has already been made by some of the plants, and for a time there was a possibility of this becoming more general. With the exception of an abnormal cold spell during which heavy snow lay over the whole province for well over a month, the precipitation was lighter than usual last season, resulting in a scarcity of water, with the quantity behind the dams decreasing slowly but surely.

The mill at Ocean Falls closed some weeks ago, during the cold spell, and owing to scarcity of water was unable to re-open in all departments, the newsprint and kraft paper mills remaining closed.

The plant at Powell River was fortunate in escaping serious embarrassment, as the situation was more serious than it had been for years. In that case there was plenty of snow in the hills, but heavy frost kept it from melting.

Establishment of a pulp mill on Poplar Island, in the Fraser River, at New Westminster, is forecast by persistent rumors circulating in Vancouver. This project was first mooted a number of years ago, and has since been under consideration at various times. According to reports now circulating, the scheme has been revived and capital is said to have been advanced by continental backers for an immediate start on the project. No definite confirmation can be secured, however.

❖ NEW BRUNSWICK ❖

Fraser Builds Sulphite Mill at Athol

The Restigouche Co., Ltd., has commenced construction of a large high grade bleached sulphite pulp mill at Athol, and it is expected that the new plant will be in operation before the end of 1929. The Restigouche Co. is controlled by the Fraser Companies, Ltd., through ownership of its entire capital stock. This pulp mill, which will cost approximately $4,000,000, will have a capacity of 45,000 tons annually and will, when completed, in conjunction with International Paper's newsprint mill at Dalhousie, make possible a closer utilization of the forest products than had previously been possible in the Restigouche River District.

Leland M. Ester, assistant superintendent of the Androscoggin Pulp Co., South Windham, Me., who had been with the company for twenty-one years, has resigned to become general superintendent of the new board mill of Fraser Paper, Ltd., at Madawaska, Me., and Clarence J. Chambers, who had been with the Androscoggin Pulp Co. for the past sixteen years also resigned to become night superintendent in the new Fraser board mill.

I. P. Co. to Build Mill at Chatham

It is expected that actual construction of the sulphite pulp mill at Chatham will be begun during the present year. A party of surveyors in the employ of International Paper Co. is actively engaged in cruising the J. B. Snowball Co. limits, and it is understood that an option on the mill site and crown lands has been given by the company to Ward C. Pitfield and Co., Montreal. The J. B. Snowball Co., Ltd., is one of the oldest lumber concerns in the province and has extensive timber holdings in the Northern Counties, besides a large mill at Chatham where the head office of the company is located. The news of such negotiations being under way is of interest, as it has been reported for some time that International Paper was coming to the Miramichi territory and would erect a large sulphite mill there, evidence of which is now practically borne out by the option which, it is stated, has been taken by the Montreal financial brokers for International Paper.

When a start was made in the construction of the Dalhousie plant, it was believed that the work could not be completed until early in May of 1930. The open winter, however, has facilitated building operations, so that more construction work could be executed during the winter than had been anticipated. It is felt that the plant will be in operation at least six months earlier than had originally been announced.

❖ NOVA SCOTIA ❖

International Paper Co. is reported to have taken an option on the common stock of the Avon River Power Co., which supplies light and power in Windsor, Hantsport and the surrounding territory. The total power development is 9,350 horsepower, and there are 75 miles of transmission line. International Poper already owns timber limits in Nova Scotia, while the Avon River Power Co. owns and operates a groundwood mill and timber limits.

It is reported that over 30 per cent of the steel work for the plant of the Mersey Paper Co., at Herring Cove, near Liverpool, has been erected, and it is expected that the mill will be making newsprint by November of this year. Company officials expect to have no difficulty in marketing the product, as they regard the mill site as ideal for shipments. Located at tidewater, the company can convey the rolls of paper from mill to steamer, thence to be transported to the great newsprint markets on the Alantic seaboard of the United States. Wharves are being built at Herring Cove, enabling cheap transportation of both raw material to the mill and finished product from the mill.

The Minas Basin Pulp and Paper Mills, Ltd., has commenced operations in its newly constructed 40-ton mill for the manufacture of groundwood for the export market. The company will also supply Windsor, Hantsport, Wolfville and other important towns at the base of the Annapolis Valley, with power and electric light. The company is blessed with large holdings of timberlands all along the Dominion Atlantic Railway and on the shores of Minas Basin.

RYTHER AND PRINGLE COMPANY CARTHAGE N.Y.

RYTHER SLASHERS

RYTHER SLASHERS are built to carry from one to eight saws, depending upon the length of logs received and the desired pulpwood size. The frame is of structural steel throughout. The machine parts are extra heavy and designed for maximum capacities. Each slasher is a complete unit and can be introduced in any cutting up system.

CANADIAN INGERSOLL-RAND COMPANY, LIMITED
10 PHILLIPS SQUARE, MONTREAL, P. Q.

ENGLAND

General Trade Conditions

Regarding general trade conditions, the wrapping section is very busy notwithstanding an increasingly heavy import, and prices are fairly satisfactory. Business is steady in the newsprint section, and most mills are on full output, and have a good supply of forward bookings. The price problem has been unsolved, and will remain so until the Canadian situation is rectified, for overproduction and price-disturbance in that country have reacted on Continental supplies.

Moderate business is being done in the wood-free mills. Continental competition is still keen. Certain home manufacturers benefitted by the severe winter conditions which caused a temporary cessation of foreign supplies. It is estimated that the increasing consumption of the better grades of woodpulp for artificial silk manufacture may eventualy create a difficult situation in the paper trade. This industry can afford to pay more for the pulp than the papermakers.

Much the same applies where rag is used as a raw material, owing to the liking of the rayon industry for cotton cellulose. One advance in price, namely cotton linters, a substitute for rags, has definitely been attributed to the demand created by the artificial silk firms.

In the fine paper section, the leading makers are securing the bulk of the trade, and some of the smaller mills have difficulty in keeping their markets. The tendency is more and more towards the control of distribution by the manufacturers. More attention is being paid to the question of branding, and merchants are beginning to occupy a much less important place in the British paper trade. Most of the large and medium sized printers and paper users now place their orders with the mills direct.

During the last twelve months new machines have been installed in every section of the papermaking industry, wrapping makers have extended their equipment, and new plants have been installed for the production of kraft brown papers, while the new mill for the production of vegetable parchment has made progress. A noticeable tendency is the increase in the holding capacity of beating engines, and the actual beating area of knives and bed plates.

The shortage of esparto grasses has hardened prices in this section considerably, both Spanish and African esparto costing about two dollars more a ton than they did a year ago, but manufacturers are keeping to the established prices for their paper in spite of this situation, but it is thought that if they wish to keep to the accustomed quality and quantity of esparto in the paper, it may be necessary eventually to increase the selling figure for standard esparto papers.

Import and Export Figures

Below are set out the values of the paper trade imports and exports during February, together with the increases or decreases, as compared with the corresponding month of the two preceding years:

IMPORTS

	Feb., 1929.	Inc. (+) or Dec. (—) as compared with 1928.	Inc. (+) or Dec. (—) as compared with 1927.
Paper-making Materials...	566,266	+68,336	—182,939
Paper and Cardboard.....	1,089,647	—147,926	—98,466

Quantities of the same articles imported:

	Feb., 1927	Feb., 1928	Feb., 1929
Wood pulp, tons	70,062	57,770	73,517
Paper, cwt.	1,210,632	1,423,768	1,083,168

EXPORTS

	Feb., 1929.	Inc. (+) or Dec. (—) as compared with 1928.	Inc. (+) or Dec. (—) as compared with 1927.
Paper-making Materials...	104,720	—3,730	+16,093
Paper and Cardboard.....	734,186	—7,261	—33,258

Quantities of the same materials exported:

	Feb., 1927	Feb., 1928	Feb., 1929
Paper-making mater'ls,tons	11,278	14,850	14,808
Paper & cardboard, cwt.....	408,609	377,200	392,227

Full-Fibre Pulp

with

HELIN
Beater Filling

IT'S similar to basalt lava in its action, but it is not nearly so costly and it wears far longer. Hydrates pulp twice as fast as steel knives and does it without cutting the fibres. This is particularly important when strong long-fibred paper is wanted—so it is especially suitable for Kraft and wrapping paper. Made simply of cast iron with a porous lava-like surface. Beats thoroughly and quickly—and is made to fit any beater.

Bigger Production at Lower Cost

In actual tests—where machines, pulp and all conditions except the Filling were exactly the same—Helin Beater Filling produced *twice as much* hydrated pulp in the same length of time as did the steel knife filling.

Thus the capacity of the beaters is increased 100% and the power per ton of paper is reduced more than 30%. Add to this your better quality of pulp and you have real profitable economy.

To increase your volume—just equip the beaters you have with Helin Beater Filling.

The Famous U-BAR Barking Drum

Built to fit the job—Big production results from the special design and is insured by rugged dependable construction. The specially designed U-BARS of high carbon steel are joined securely to heavy ship channel rings with *multiple-rivet* joints —thus effective, clean barking.

Smooth rotation is the result of chain suspension with guide-rolls, sprockets and spring takeups of shock absorbers—hence *faster* rotation and BIG PRODUCTION.

Full Details Sent on Request

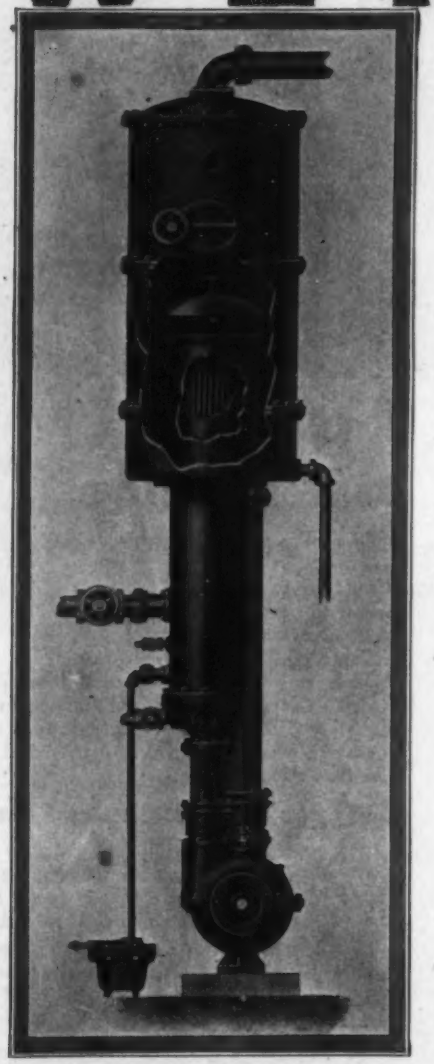
Fibre Making Processes, Inc.

CHICAGO, U. S. A.

Canadian Barking Drum Co., Ltd., Toronto

BARKING U-BAR DRUMS

SWENSON



THE SWENSON F.C. EVAPORATOR

(FORCED CIRCULATION)

Advantages

Continuous operation
Practically no entrainment
High capacity
Reduces floor space requirements
Special metal heating surface

Economies

Lower steam costs
Lower operating costs
Lower plant losses
Lower labor costs
More floor space available for production increase
Lower maintenance

Forced circulation greatly increases the density to which Kraft black liquor may be concentrated; makes possible greater steam economy in electrolytic caustic evaporators; and greatly reduces the scaling tendencies of neutralized sulphite waste. Reduced heating surface, due to the accelerated heat flow, means that corrosion troubles may be eliminated by the use of the more expensive metals and alloys. Complete information is in our new Bulletin. Fully protected by patents granted and pending.

Send for Bulletin No. S-128

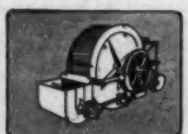
SWENSON EVAPORATOR COMPANY

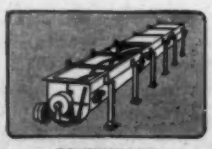
(Subsidiary of Whiting Corporation) 15673 Lathrop Ave., Harvey, Ill. (Chicago Suburb)

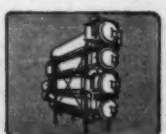
BASKET TYPE EVAPORATORS

VERTICAL TYPE EVAPORATORS

HORIZONTAL TUBE EVAPORATORS


ROTARY VACUUM FILTERS


CONTINUOUS CRYSTALLIZERS


YARYAN EVAPORATORS

Plant Discovered Which Produces Cellulose

Another addition has recently been made to the raw materials for papermaking in the form of an agricultural plant which grows readily from seed, and matures rapidly within 12 or 18 months, attaining a height of 8 to 10 feet, and having a stem circumference of 8 to 10 inches. The company which proposes to exploit this new raw material claims that if planted in the spring and harvested at maturity, that is to say in the late summer or early autumn of the following year, it produces three raw materials of commercial value, and in universal demand, namely: fiber for textile purposes, wood cellulose from the core for papermaking, and seed for cattle food. It is further claimed that for a mature crop 7,000 plants to an acre can be grown, and that, alternatively, it can be planted in the spring and harvested in the autumn of the same year for its fiber only, in which case the yield of fiber is greater owing to the increased number of plants (40,000) that can be grown per acre.

The plant, it is stated, will grow well from seed in any mild climate, such as the south and west of England and many parts of our Colonies and other foreign lands. Public interest has been aroused in the product by the publication of a prospectus in the daily newspapers of the Brotex Cellulose Fibers, Ltd., a company being formed with a capital of one million pounds, to take over the patent rights and assets of Brotex, Ltd., "Brotex" being the name of the plant concerned.

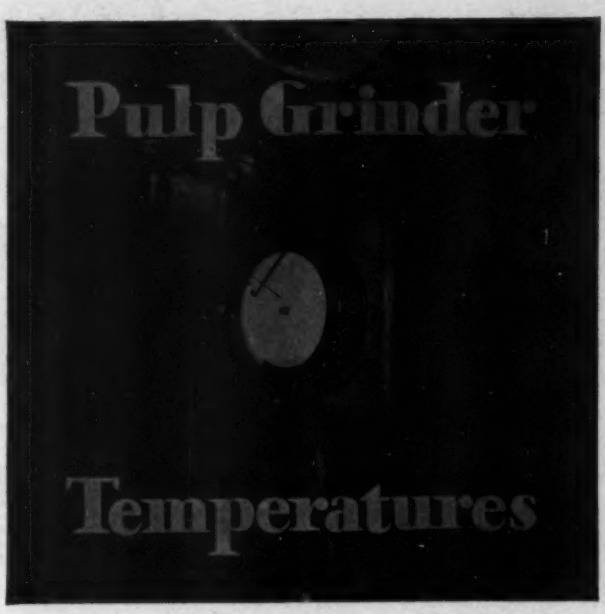
Sindall and Bacon, analytical chemists and advisers to the paper trade in this country, report as follows on the plant:

"Assuming that 7,000 trees were planted to the acre and allowed to reach maturity, that is, grown to seed, we should obtain the following quantities of utilizable air-dry wood core and bast fiber:—air-dry core 5.37 tons (long tons) per acre; air-dry bast 4.55 tons (long tons) per acre. With a view to utilizing the above materials for papermaking purposes we have carried out a series of trials (covering a period of about 10 months) by the usual process applied to such materials, and have obtained the following yields of bleached (white) air-dry cellulose fiber:—wood core 35.4 per cent, bast fiber 35.0 per cent.

"Woodcore:—On the basis of 5.37 tons of air-dry wood core per acre, a quantity of pulp would be obtained equal to 1.8 tons of air-dry bleached wood cellulose. Bast fiber.—On the basis of 4.55 tons of air-dry crude bast fiber, a quantity of pulp would be obtained equal to 1.59 tons of air-dry bleached cellulose. Total yield when both bast and core are utilized for cellulose pulp for papermaking purposes would be 3.39 tons per acre.

"From the general character of the fiber in the bleached cellulose pulp, we are of opinion that the value should be about £15 to £16 per ton; papers made from which have been submitted to you from time to time. We would, however, point out here that we consider the bast fibers of such a quality that they ought to be used for textile purposes as, from the tests we have made, we are satisfied that they should realize much higher prices in that application and only waste from these should be utilized in paper making."

It is interesting to know that Portals, Ltd., Turkey Mill, Keighley, Yorkshire, makers of tub-size ledgers, bonds, banks, loans, currency papers, and special water marks, have made trials with the pulp made from the fiber, and have found it very suitable for making high-grade paper. It appears from the figures that the yield of pulp per acre, if all the plant be used for wood pulp would be about 3.39 tons, but as the bast fiber is so much more valuable for textile purposes, only about 1¾ tons per acre once every two years could be reckoned on for papermaking. The price at which this bleached paper is valued—about $64 per ton—puts it on a level with the better grades of sulphite pulp now in use. One expert has pointed out that with a yield of 7/8 ton per acre, it would require something like 800,000 acres to grow sufficient of this plant to meet the requirements of British mills at the present rate of consumption, that is, of course, if the pulp is suitable for all purposes for which sulphite wood pulp is now used. No statement has so far been made as to the available territory for growing this plant, nor the nature of the soil most suitable. It will obviously be a national asset if it can be grown on waste



American Recording Thermometer on a pulp grinder, Canadian International Paper Co., Three Rivers, Quebec, Canada.

If a record is kept of pulp grinder temperatures, the stones may be maintained at a uniform temperature. Just enough cooling water may be admitted for the best grinding and to prevent breakage of stones.

This is only one use of American Recording Thermometers to increase the efficiency of paper mills.

Specify Catalogs Desired

Recording Thermometers.....H-41
Glass Thermometers.....F-41
Dial Thermometers.....G-41
Recording Gauges.....E-41
Sulphite Gauges.....A-41
Paper Machine Tachometers...O-41
Temperature Controllers.....R-41
Ashcroft Paper Tester.....C-41
Ashcroft Thickness Gauge.....L-41

AMERICAN INSTRUMENTS

Since 1851

CONSOLIDATED ASHCROFT HANCOCK CO. INC.
Subsidiary of Manning, Maxwell and Moore, Inc.
100 East 42nd Street, New York City

KENWOOD

WOOL PRODUCTS

REG. U. S. PAT. OFF.

RESULTS

Scientific selection of wool—basically sound design plus the added advantages of Kenwood Processes, produce a Felt which gives these results—Strength, Openness, Finish and Long Life. Strength for the hard pull—Openness for the high speed—Surface for the best finish —Basically Sound Design for Long Life.

Because of the above characteristics

KENWOOD TANNED FELTS

afford not only continued High Production but definite economies.

F. C. HUYCK & SONS

KENWOOD MILLS, ALBANY, N. Y.

KENWOOD MILLS LTD. ARNPRIOR, ONTARIO

lands still found in all parts of the British Isles (although many of these have of recent years been adapted for practical commercial use for growing conifers by the Forrestry Commissioners), and if the papermakers find it equal to sulphite wood pulp in actual bulk makings, it will be one factor towards solving the raw materials shortage problem if and when wood pulp begins to run short.

The Prince of Wales in a speech at the Mansion House, London, on the occasion of a dinner celebrating the opening of the British Industries Fair, called for better British salesmanship abroad. It has been suggested that this should be taken to heart by British papermakers, and one critic asks: "What is the use of making the finest printing and writing papers in the world, and expecting to do a good export business, if the foreign buyers have never seen anything of the paper, and know nothing of the capacity of British mills?" "Something should be done," he says, "to let the foreign buyer know the truth about the British paper trade."

❖ WISCONSIN ❖

Wisconsin Carton to Locate at Stevens Point

Instead of erecting a new plant at Neenah, the Wisconsin Carton Company has leased for a period of three years the grounds and buildings of the Trenam Tractor Company, of Stevens Point, Wis., with the option to renew for a total of fifteen years. Immediate alteration of the plant will be started and a committee has been appointed to purchase machinery for cartons and for printing labels.

The change of location from Neenah to Stevens Point came about largely through the influence of E. A. Oberweiser, secretary-manager of the Whiting-Plover Paper Company, of that city. He secured the option on the plant and induced the carton company to accept a plant already built instead of building a new one. The site where the Valley Paper Mills intended to build at Neenah previously had been acquired for the factory.

L. R. Anderson, a Stevens Point business man, has purchased an interest in the company and has been elected to the board of directors. He also is secretary-treasurer of the company. The production manager is to be James Mader, of Neenah, Wis., an experienced carton man. He is vice president. B. C. Koepke, prominent contractor of Appleton, Wis., is president.

Expansion at Northern Paper Mills

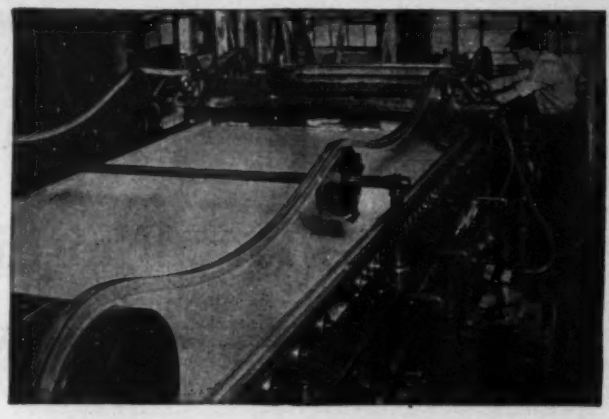
As a part of the $500,000 expansion program of the Northern Paper Mills, Green Bay, Wis., excavation has been started for an addition three stories high, and 70 by 204 feet in size. Additional storage space has been needed, and the addition also permits rearrangement of offices and several departments.

The first floor will contain a machine shop, electric shop and pipe shop, a timekeeper's office, waiting room, employment office and hospital rooms. Offices of the purchasing agent, mill manager, plant engineer and engineering department, chemistry department and a laboratory, and pulp storage will be located on the second floor. The third story is to contain slush pulp tanks. The company is doing its own construction work with day labor under the direction of H. W. Gochnauer, chief engineer. The addition will be occupied about July 1st.

Fort Howard Power House Completed

Expenditures of about $150,000 are being made at the Fort Howard Paper Company, Green Bay, Wis., in order to improve its power facilities. A new power house is being completed which will house a new 1500 kw. turbo-generator which has been ordered from the General Electric Company.

The building is 30 by 50 feet in size, two stories high. The generator will be on the second floor, leaving the first



Clip dollars from operating costs

EFFICIENT Oakite materials speed washing and rinsing of felts, leave them open textured and soft, and make them last longer. Much hand brushing of wires is eliminated—there is no warping when they are cleaned the Oakite way. And these vigorous dirt removers take the hard work out of cleaning wires, screens and screen plates. Long costly shutdowns that interfere with production are avoided, equipment lasts longer, operating costs go down.

Write and ask to have an Oakite Service Man call. Let him show you how quickly, thoroughly and safely Oakite accomplishes these advantages. No obligation.

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, *Boston, Bridgeport, *Brooklyn, N. Y., Buffalo, *Camden, N. J., Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., Decatur, Ill., *Denver, Des Moines, *Detroit, Erie, Pa., Fall River, Mass., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., *Kansas City, Mo., *Los Angeles, Louisville, Ky., Madison, Wis., Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, Oklahoma City, Okla., *Oakland, Cal., *Omaha, Neb., Oshkosh, Wis., *Philadelphia, Phoenix, Ariz., *Pittsburgh, Pleasantville, N. Y., Portland, Me., *Portland, Ore., Poughkeepsie, N. Y., Providence, Richmond, Va., Reading, Pa., *Rochester, N. Y., Rockford, Ill., *Rock Island, Sacramento, Cal., *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Springfield, Mass., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Wichita, Kan., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

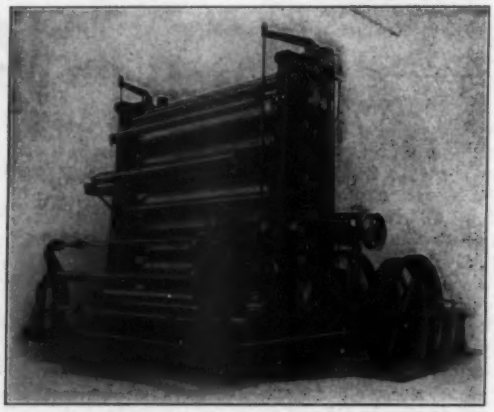
OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

ASK NORWOOD

About Finishing Machinery



WHEN you want information about finishing machinery—or help in solving some finishing problem—ask Norwood to co-operate with you.

Norwood has been building paper finishing machinery for over a third of a century, and has been in the lead with a great many improvements and advancements.

Norwood has the experience, the plant, and the ability to furnish you with the finishing machinery best suited for your particular requirements, and Norwood's habit of close co-operation with paper mill men effects economies and results in lasting satisfaction.

You Can't Go Wrong With a Norwood Installation Of

Filters
Calenders
Platers
Dusters
Rag Thrashers
Dampeners
Folding Machines
Suction Boxes
Or other equipment.

Full information upon request

Ask Norwood about finishing machinery —super-calenders, glassine calenders, platers, dusters, thrashers, dampeners. You will find Norwood ready and willing to give you close co-operation, and able to build finishing machinery that will "stand the gaff" and give you long and satisfactory service.

Norwood Engineering Company, Florence, Mass.

NORWOOD

floor available for the condensers and auxiliary machinery. Boiler equipment has been installed in a new boiler house sufficient to operate this generator and another of 2,500 kw. which probably will be put in later. Enough current will be generated by the present equipment to operate two paper machines, both of which are being equipped with direct electric drives.

Steam from the turbine will be bled off at low pressure through an exhaust system which will permit a reduction from 325 to 30 pounds. The steam will be conveyed to the drums on the paper machine and used for heating. The construction contract was awarded to the H. J. Selmer Company, of Green Bay, and the engineering work is in charge of W. L. Fergus Co., of Chicago.

An addition to the plant of the Banta Publishing Company, of Menasha, Wis., will soon be under construction and will be the second enlargement within a year. An addition completed a short time ago provided additional press room. The new unit is to be one story, and 90 by 150 feet in size. It will house a box factory and machine shop, and also provide extra storage space.

Safety Items

Among the interesting safety accomplishments of the Wisconsin mills is a record of operating for one full calendar year ending March 6, 1929 without a loss time accident in the wood yard of the Kimberly-Clark Corporation's mill at Kimberly, Wis. With plenty of hazards, changing help, and other conditions which make safe operation difficult, this department managed to drill the safety idea into its men until this enviable record was made. The company rewarded the 38 men responsible for this situation with checks of five dollars each.

Paper mills at Marinette, Wis., are assisting in a series of city-wide industrial safety meetings. At a recent session attended by 227 persons, the speaker was Voyta Wrabetz, of the Wisconsin Industrial Commission. He told of the necessity for greater safety efforts, because Marinette county has had double the number of permanent disability cases of any county in the State, the total averaging 16 per cent, as against 8 per cent elsewhere. He emphasized the savings of time and money to both employer and employee where accidents are minimized.

A system which centers responsibility more effectively and provides closer supervision of safety work is in use at the Kimberly-Clark Corporation's mill at Niagara Falls, N. Y. Each month one of the mill foremen is appointed as safety foreman. He keeps contact with all other foremen to see that they do not become lax in their safety instruction and attention to hazards. He makes note of all conditions that need remedying, and of safety guards that may be needed. At the end of the month he reports these matters to the mill officials.

One lost time accident marred what would have been an outstanding safety record at the Park mill of the Marinette and Menominee Paper Company, Marinette, Wis. The mill had operated for 231 consecutive days without such accident. Alfred Lalonde, a yard worker, suffered a broken bone in the foot when some logs fell on him.

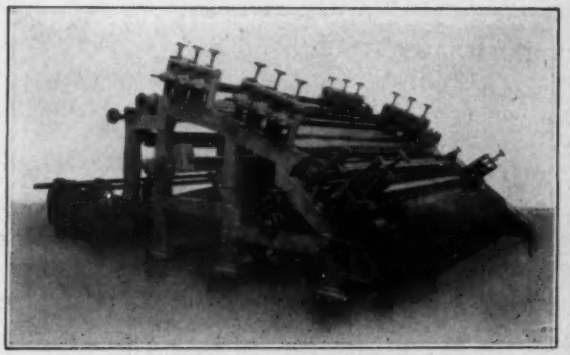
A recent session of the weekly safety school at Appleton, Wis., was attended by 330 persons, including executives, foremen and employees of a number of paper mills. The speaker was John L. Madden, of St. Paul, Minn. He declared that individuals, not laws, rules and regulations, are the biggest factors in accident prevention. Individual co-operation and respect for the other fellow's property are necessary adjuncts to safety.

Kimberly-Clark Shows Increased Production

Net sales of the Kimberly-Clark Corporation, Neenah, Wis., were increased from $17,472,623 in 1927 to $21,533,263 in 1928, according to the annual report submitted to stockholders by F. J. Sensenbrenner, president. The net earnings, on the other hand, showed a decrease from $2,917,367

WALDRON

Arched Bed Coating Machine



Affording all the advantages of the cylinder machine plus sufficient brush capacity for high speeds—in excess of present established incline bed machine practices.

This seven brush Waldron coating machine incorporates a straight line brush motion with an arched bed and improved drives to better handle wide goods at a high speed. The undue stresses and vibrations in running wide goods at high speeds are eliminated by the extra heavy construction of the machine throughout. The usual trouble due to slack edge and wrinkling of goods has been overcome by the arched surface in conjunction with adjustable rolls. Where operating speed in addition to smooth coating is a requirement, the specifications and performance of the Arched Bed Coater merit prompt investigations.

Waldron Machines For

Embossing & Printing
Winders, Reels, Waxing,
Gumming, Impregnating
Sizing and Coating
Wall Paper Machinery
Sand Paper Machinery

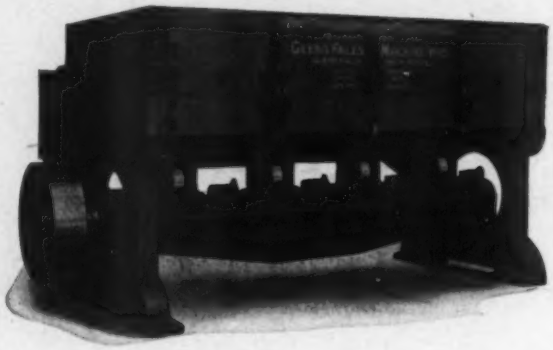
Specialists in Designing, Fabricating and Installing Complete Factory Layouts For Floor Covering, Wall Paper and Coated Paper.

Write For Information Concerning Type of Equipment You Are Interested In.

JOHN WALDRON CORPORATION

Main Office & Works—New Brunswick, N. J.

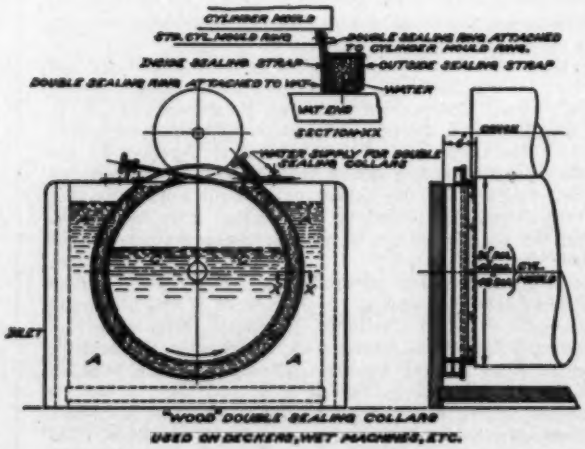
NEW YORK
30 East 42nd St.
CHICAGO
208 W. Washington St.
PORTLAND, ORE.
519 American Bank Bldg.
MONTREAL, P. Q.
New Birks Bldg.



The
FANCHER
Patented
ROLLER SHOE FLAT SCREEN

ANNOUNCING

The
A. D. WOOD
DOUBLE SEALING COLLAR
(Patent Applied For)



GLENS FALLS MACHINE WORKS
GLENS FALLS, NEW YORK

Waterous Ltd., Brantford, Ont. Manufacturing Agent

E. K. Mansfield Co., 501 Fifth Ave., N. Y. C.
Eastern Representative

Western Representative
Woodbury & Wheeler Co., 55 Second St.,
Portland, Ore.

See pages 336 and 337 in the 1928 Paper and Pulp Mill Catalogue

in 1927 to $2,154,663 in 1928. The latter amounts to $4.39 a share on 490,000 shares of common stock, as compared to $4.73 in the previous year.

Mr. Sensenbrenner says in his report: "Production of paper and pulp for sale during the year totaled 161,184 tons, and despite reductions in prices, net sales amounted to $2,497,969 more than in 1927. Although the company is known as a manufacturer of book paper for use in printing rotogravure sections, magazines, mail order house catalogs and such papers which constitute the major part of its production, it has been the policy of the company for some years to diversify its products so that today it manufactures a great variety of papers and paper products. Its leading lines of specialities are wall paper, school practice papers, high grade deep color cover papers, absorbent wadding used exclusively in surgical work and in the manufacture of sanitary pads, facial tissue and other specialties. Current conditions and the outlook for a demand for the company's products for 1929 are satisfactory."

The statement shows total assets of $45,758,129. The current assets as of Jan. 1, 1929 were $8,797,471, and current liabilities were $3,838,869.

Paper Mills Elect Officers

Several large companies have held elections in the last month. All officers were re-elected by the Kimberly-Clark Corp., Neenah, Wis. They are: president, F. J. Sensenbrenner; vice presidents, Ernest Mahler, John F. Sensenbrenner, S. F. Shattuck and William Bonifas; secretary-treasurer, Harry Price; assistant secretary, C. A. Sommers.

The Nicolet Paper Co., DePere, Wis., re-elected William C. Wing, of Neenah, Wis., as president. Other officers are: vice president and general manager, H. C. Hanke; secretary, E. J. Dempsey, Oshkosh, Wis.; treasurer, H. K. Babcock, Neenah, Wis.; directors, C. B. Clark, Neenah, Wis., Paul Bushong, Gladstone, Mich., and M. Smith, Menasha, Wis.

Re-election of officers also took place at the Moloch Foundry and Machine Co., Kaukauna, Wis., as follows: president and general manager, R. M. Kanik; vice president, Dr. C. D. Boyd; secretary, Hugo Weifenbach; treasurer, Joseph J. Jansen; directors, C. E. Raught, Julius J. Martens, H. S. Cooke, Charles Jacobson and L. F. Nelson.

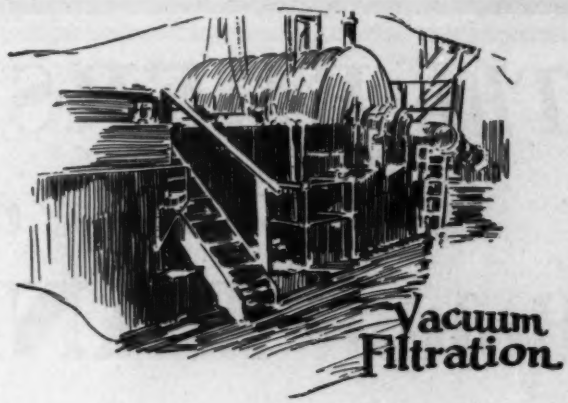
Pay Large Accident Settlements

Two large settlements for accidents have been made by paper mills. Under a decision of the Wisconsin Industrial Commission, the Riverside Fibre and Paper Company, Appleton, Wis., was required to pay $5,027.50 to the widow of Edward Gastrock. This man died from a rupture of the bowels, resulting from a compressed air hose in the hands of fellow employees. Settlement was made through the Employers Mutual Liability Insurance Company. The commission contended that employees should be taught the hazards of such apparatus, and that the nozzle should carry a warning to keep it at a safe distance from the body.

The Thilmany Pulp and Paper Company, Kaukauna, Wis., made voluntary payment of $7,000 to the widow of Henry VanLarhoven, of Kimberly, Wis. He was fatally injured when run down by one of the company's trucks.

Arrangements have been made for a twelve-Pullman train to convey New England paper mill executives to the tenth anniversary convention of the American Pulp and Paper Mill Superintendents Association at Wausau, Wis., June 6 to 8. The train will start from Boston. A golf tournament will be one recreation feature of the convention. Prizes for low net and low gross will be given both the visitors and the members. An attractive folder giving all the details of preparation has been sent by R. H. Kelly, general chairman, to all members. All are urged to send hotel reservations early.

A plan of unemployment compensation is to be tried by the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., following an agreement reached with



Dependable Vacuum Pump Service

The success of a vacuum filtration installation, as well as any other process requiring the producing and maintaining of vacuums, is very dependable on the suction producer. It must have characteristics suited to the requirements of the installation.

The Connersville Cycloidal Vacuum Pump, because of the action of its rotating impellers, produces a positive suction, and within the range of requirements in the majority of installations offers a service that is economical in power and maintenance costs. Sturdy design and construction are guarantors of dependable operation.

Bulletin 20B has just been issued describing Cycloidal Pumps for normal vacuums of 15 in. mercury and maximums of 20 in. It will give you detailed information about these pumps. Send for a copy.

The Connersville Blower Company

Kentucky Ave., at 16th Street

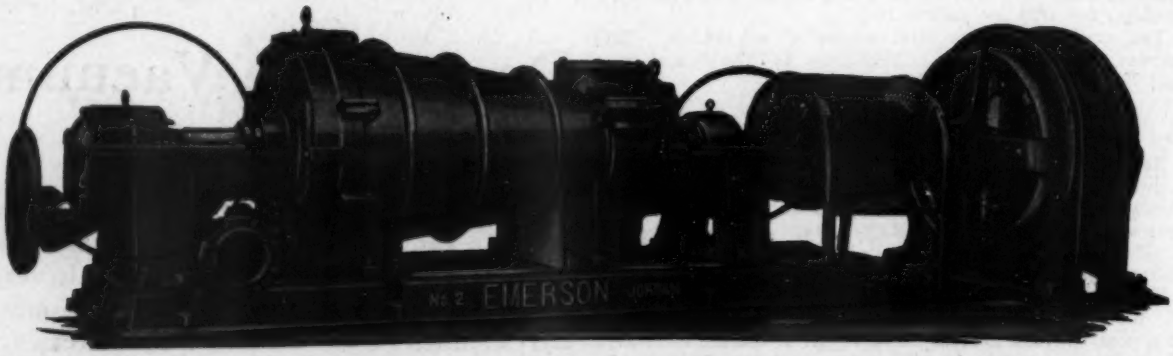
Connersville, Indiana

Branch Sales Offices are maintained in the Monadnock Block, 53 W. Jackson Blvd., Chicago, and at 114 Liberty Street, New York, and the Chamber of Commerce Building, Pittsburgh, for your convenience in obtaining information about our products. Give them a ring.

CONNERSVILLE

Blowers · Gas Pumps · Meters · Cycloidal Pumps

The EMERSON JORDAN *equipped with the* Bolton BANDLESS Plug



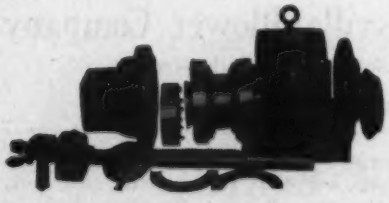
Showing construction of the Bolton Bandless Plug. Knives and woods cannot come out. *NOTE INVERTED WEDGES*

Now every Emerson Jordan offers you the tremendous advantages of the Bolton BANDLESS Plug and Timken Roller Bearings.

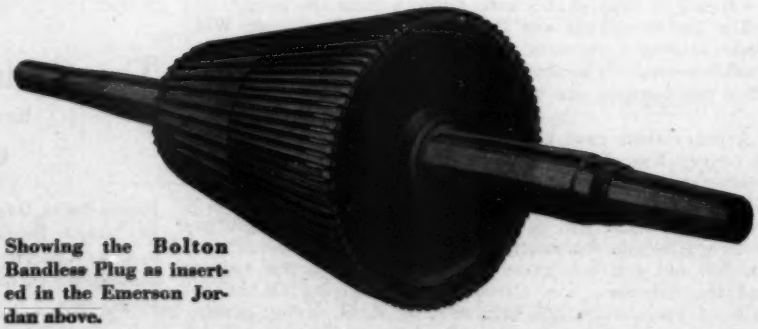
These two great features put the Emerson Jordan in a class by itself for unit control, lasting satisfaction and true economy. No other Jordan has these great construction advantages.

Make sure of all the benefits and savings that result from these two wonderful improvements in Jordan engineering. Standardize on Emerson Jordans.

Write for full information and estimates



Detail of Timken end bearing which takes care of both radial and thrust.



Showing the Bolton Bandless Plug as inserted in the Emerson Jordan above.

The EMERSON MANUFACTURING COMPANY

LAWRENCE ∞ ∞ ∞ MASSACHUSETTS

DIVISION OF JOHN W. BOLTON & SONS, Inc.

2683

the three central labor unions. During shutdowns of the mill, employees will be paid one-third of their regular wages to tide them over until work is resumed. The plan is not permanent, but will be given a test as to its feasibility.

An appropriation of $100,000 by congress will permit the Government to complete the large power dam on the Fox River at DePere, Wis. New gates were installed last year, and the abutments and retaining walls are to be built this summer.

Consolidated Honors the Press

The Consolidated Water Power and Paper Company, of Wisconsin Rapids, Wis., had as its guests at a banquet at Madison, Wis., recently members of the Wisconsin Daily Newspaper League and the Wisconsin Associated Press. An address was given by Gov. Walter J. Kohler concerning the state legislative program.

Newspaper executives will be tendered a vacation tour to the northern woods and lakes of Wisconsin, Michigan and Minnesota August 9 to 12, 1929 by the Consolidated Company. All transportation, meals, lodging and entertainment will be furnished by the company. Community banquets will be arranged as well as interesting side trips to scenes of interest. Rockford, Ill., will be the starting point. The purpose is to build good will for the company among the publishers.

Radio Programs for Fort Howard Employees

Employees of the Fort Howard Paper Company, Green Bay, Wis., will be permitted to hear radio programs while at work, according to arangements made by A. E. Cofrin, president. A receiving set has been placed in the commissary department, and loud speakers are wired to each department. With the exception of the office and machine shop, programs will be broadcasted continually.

Mr. Cofrin believes this will increase the morale and production of the workers, and will be especially welcome to the night crews. The apparatus permits messages to be transmitted from the office to each department via the loud speakers.

Permanent headquarters of the newly created Lake States Forestry district will be at Milwaukee, Wis., according to a decision of R. Y. Stuart, federal forester. This office will supervise reforestation, fire prevention and federal forest preserves in Wisconsin, Michigan and Minnesota.

The resignation is announced of Henry Josephs, superintendent of the Daniels Manufacturing Co., Rhinelander, Wis., a paper specialty plant. He has become resident manager of the Marathon Paper Mills Company's mill at Ashland, Wis.

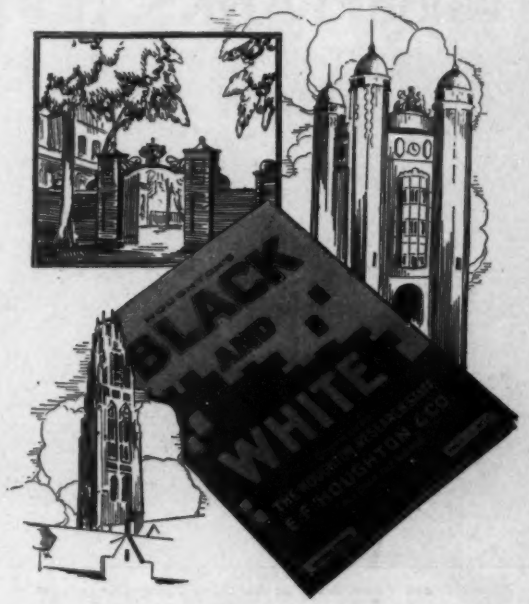
Announcement is made of the death at Phoenix, Ariz., of John Lowe, who was associated with the paper industry of the Fox River Valley for a number of years. His last position was that of secretary and superintendent of the Appleton Coated Paper Company, Appleton, Wis. He resigned in 1924 because of ill health.

The new addition to the Brown Paper Goods Company's plant at Rhinelander, Wis., is expected to be ready about April 15, according to Spencer Brown, general manager of the concern. The addition itself has been completed, but it still remains for the machinery to be installed.

Kimberly-Clark Buys Lakeview Mill

The Lakeview mill at Neenah, Wis., which was purchased recently from Sears Roebuck and Company by the Abitibi and Mead interests, has been purchased by the Kimberly-Clark Corporation.

The mill has two machines and a capacity of 45 tons daily. It has been idle since March 1st causing unemployment for 108 workers. The new owners have made no announcement as to what they intend to make of this plant.



75 Great American Universities and Technical Colleges Endorse Houghton's "Black and White"

Members of the faculties of the great American Universities are highly trained, practical men, who know a good technical article when they see it. "BLACK AND WHITE" appeals to them because it is practical and authoritative.

"BLACK AND WHITE" will appeal to you too. It deals largely with manufacturing and maintenance problems of the type YOU are called upon to face in YOUR plant. Its articles are written primarily for men like yourself, actively engaged in industry.

At the present time, over 4000 students in 75 American Universities of note are using "BLACK AND WHITE" in connection with their studies. In each case, the head of one of the departments wrote to us asking that we supply "BLACK AND WHITE" in bulk quantities for use by their students—proof positive that "BLACK AND WHITE" is distinctly out of the ordinary.

"BLACK AND WHITE" editorials and feature articles are up-to-the-minute in every detail. Every article appearing in "BLACK AND WHITE" is especially commissioned and copyrighted. There are no reprints from other magazines.

It is worth your while to read "BLACK AND WHITE." Just fill in the attached coupon, and the postman will bring "BLACK AND WHITE" to your home or business, regularly. No charge—no obligation.

E. F. Houghton & Co., P. O. Box 6913, North Philadelphia, Pa.

Gentlemen:

I shall be glad to have you place me on the BLACK AND WHITE mailing list, without charge or obligation.

Name .....

Firm .....

Street .....

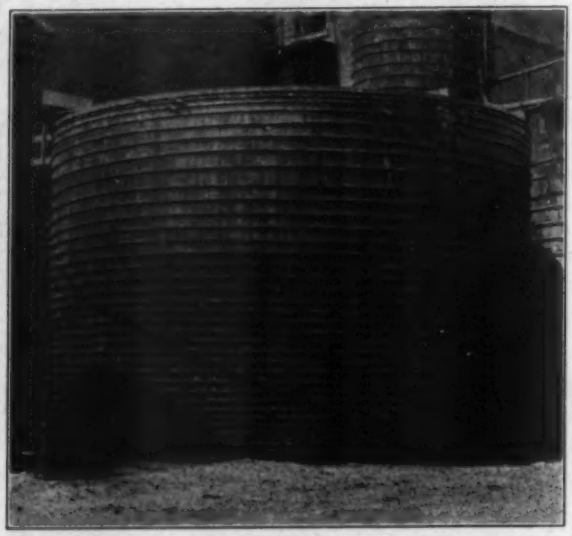
City & State .....

Applicant's Position .....

Product Manufactured .....

PI-B&W-78

WOOD TANKS TILE

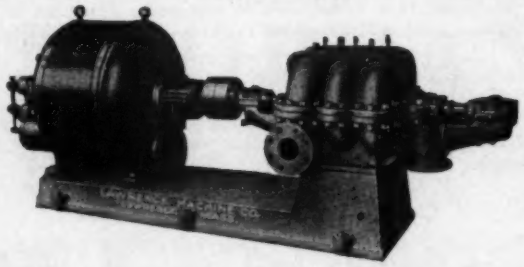


Blow Pit and Vomit Stack at Marathon Paper Company Mill.

NO TANK is too large and none too small for our tank-making equipment and stocks. We cater to the needs of the paper industry. Blow Pits, Vomit Stacks, Stock Tanks, Acid Storage Tanks, Stuff Chests, Agitators, etc. See our Condensed Catalog in Paper and Pulp Mill Catalog. Ask us about our Glazed Tile Tanks.

Tank Builders Since 1887

KALAMAZOO TANK AND SILO CO.
KALAMAZOO, MICHIGAN



LAWRENCE multi-stage high pressure pumps for boiler feed and water supply service, to meet all conditions where reliability and economical operation are an essential factor.

Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

LAWRENCE MACHINE & PUMP CO.
LAWRENCE, MASS.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

"YOUR PAPER IS MADE IN YOUR BEATERS"

Dilts

MACHINE WORKS Inc. FULTON, N.Y.
EXPORT OFFICE - 15 PARK ROW - NEW YORK CITY

"YOUR PAPER IS MADE IN YOUR BEATERS"

"TWENTY TIMES FASTER THAN BY HAND"

For lifting paper rolls, removing calender rolls or raising Fourdrinier wires, use ROEPER Type "R" Electric Hoists—With or without Trolleys—Speeds up to 40 feet per minute—Send for Bulletins.

ROEPER CRANE & HOIST WORKS, Inc.
1724 North 10th Street READING, PA.
Member of Electric Hoist Manufacturers Association

THE JOHNSON FRICTION CLUTCH

For Perforating Machines

Write for Catalog P. I.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

❖ MICHIGAN ❖

Paper Mills Fight Higher Casein Levy

With the future development of their industry seriously threatened by the proposed increase in the tariff on casein, manufacturers of coated paper in the Kalamazoo river valley district met April 4, at the Park Club to marshal their forces against the measure which will come up for consideration the special of Congress. It will be fought out under the measure of farm relief, in which it is proposed, among other things, to increase the tariff on casein from 2½ to 8 cents a pound.

In this fight, which has already taken on nationwide proportions, it was pointed out that Michigan is the pivotal state in the Union and Kalamazoo the community most vitally affected. Michigan uses 25 per cent of the casein consumed in the United States and Kalamazoo and environs fully 90 per cent of the State's total.

Figures available show that the present casein tariff levies an added cost of $272,000 from the Kalamazoo valley mills. If the tariff is increased from 2½ to 8 cents a pound, this levy will then advance to $872,800, or better than 15 per cent on the total value of coating mill properties.

Present at the conference, in addition to local manufacturers were Representative Joseph L. Hooper, Battle Creek, and Frederic W. Hume, New York. Congressman Hooper said he recognized the importance of this measure and that it is far and away the most important matter he has on his hands at this time, and that it will receive his closest attention.

Felix Pagenstecher, president of the Bryant Paper Co., briefly reviewed the local situation. He said there are six concerns in the valley engaged in the manufacture of coated paper and that coated paper plant investments amount to $5,269,908.52. There are 1817 employees and 2354 stockholders directly interested in the maintenance and continuance of this industry here. The value of the coated paper made here is about $15,000,000 annually. Mr. Pagenstecher said there were 5455 tons of casein used in the valley in 1928, which now pays a duty of $50 a ton. He pointed out that any increase in this duty will work a distinct hardship to the industry.

Representative Hooper then outlined the best defense measure to be adopted by local coated paper manufacturers. It was agreed that the most valuable step can be taken by properly informing members of the ways and means committee and the Michigan representatives in both houses of Congress of the true import and consequences if the proposed increase is made effective.

Many highly interesting points were brought out. Mr. Hume reported that both the National Publishers Association and the National Typothetae have filed protest against any increase in the tariff on casein, while the ambassador from Argentine has conferred with President Hoover, calling attention to the fact that casein is the nation's fourth most important exporting commodity and that any action on the part of Congress to hamper casein in Argentine would be considered as against that country's interests.

It was generally admitted that Kalamazoo must be represented when the casein measure is considered at Washington and President Alex G. Gilman named F. M. Hodge, president of the Kalamazoo Paper Co.; Felix Pagenstecher, president of the Bryant Paper Co., and W. M. Loveland, president of the Watervliet Paper Co., as a committee to visit Washington at that time and act under directions of Representative Hooper and Mr. Hume. Alex Gilman, as a member of the national committee from the coated interests also will be present.

Frank H. Mosteller, vice president and general manager of the Allied Paper Mills, has tendered his resignation to take effect May 1. According to Alex G. Gilman, president of the company, the resignation has been accepted and made effective at once. It is understood that the question of a successor to fill the vacancy created will be taken up immediately

Does He Work For You . . . ?

DO you have this type of employee—men who look healthy, act alive and put in a real day's work? In plants where the air is clean and fresh, and free from unhealthy steam, fumes and excessive heat industrial engineers have noted a substantial increase in production and a corresponding decrease in costs. A 36-inch

Meier Nu-air

TRADE MARK REGISTERED

fan was installed in the Casting Room of the Battery Division at the Cooper Corporation, Cincinnati. A. M. Clark, Superintendent says:

"Room temperature has been materially reduced; working conditions for the men bettered by the steady flow of fresh air and most important from our standpoint, the department has shown a 20-Per Cent increase in production. We will be pleased at any time to recommend these fans for the most severe conditions."

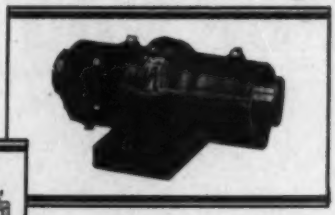
Meier Nu-air fans are designed in accordance with the latest developments in aeronautical science, are all-aluminum and equipped with totally enclosed, ball-bearing motors. They will operate in any position and are exceptionally efficient in ducts as well as in the open.

Write us today for literature

MEIER ELECTRIC & MACHINE CO. Inc. 1904

136 S. Meridian St. Indianapolis, Ind.

FRICTION *can't steal power in Oil Film Bearings*



(Sectional View) Showing the positive oiling system that never fails—that produces the almost frictionless oil film.

There is absolutely no metallic contact between shaft and bearing, when "Cleveland Type" Oil Film Bearings are in operation. The shaft floats free on a flowing wedge shaped film of oil . . . enabling heavier loads to be carried, higher speed and smooth, uninterrupted flow of power.

Cleveland Type Oil Film Bearings are designed for every class of service—low, medium, high speed, continuous, plain or water-cooled . . . and for all styles of rigid and ball and socket mountings. Write for booklet explaining principle of Flood Lubricated Oil Film Bearings.

PRODUCTS
Bearings
Clutches
Flexible Couplings
Tubular Augers
Bolt Tighteners

hill CLUTCH
MACHINE & FOUNDRY CO.
6417 Breakwater Ave. Cleveland, Ohio.
POWER TRANSMITTING ENGINEERS

A-S MACHINE CO.

Four Color Printing Unit attached to No. 4 Folder and Embosser

One of several designs used by Napkin Manufacturers and Converters. We design and manufacture Toilet Winders, Napkin Folders, Crepe Machines, Package Presses and Paper Specialty Equipment. Write for Catalogue.

Hudson-Sharp Machine Co.

GREEN BAY, WISCONSIN
Chicago Office: 574 Wrigley Bldg.
Manufacturers and Designers of Special Machinery

1,000,000,000

In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

Pittsburgh Piping & Equipment Co.
PITTSBURGH, PA.

STEEL PLATE CONSTRUCTION

Riveted and Welded
Specialists in PAPER DIGESTERS and Heavy Plate Work
RITTER-CONLEY COMPANY
Pittsburgh, Pa.

Leak-proof packing—
EBONITE

This resilient sheet packing gives thoroughly dependable service on pipe lines carrying hot water, steam, chemicals or oils. Will not blow out, harden or rot in highest temperatures and pressures.

Sample on request

QUAKER CITY RUBBER CO.

WISSINOMING, PHILADELPHIA
Branches: New York Chicago Pittsburgh San Francisco

by the executive committee. By the original arrangement which resulted in the election of Frank H. Mosteller as vice president of the company, he also was placed in active management of the plants of the corporation.

Joint Cost and Technical Meeting Announced

The second annual interstate meeting of cost and technical men, covering the states of Michigan, Wisconsin, Illinois, Indiana and Ohio, is scheduled to be held at the Park-American Hotel, Kalamazoo, Michigan, on May 17 and 18, 1929. The meeting is to follow the same general plan of the first meeting which was held in June, 1928, at Kalamazoo.

The success of the meeting of last year, demonstrated by the large attendance and interest, has stimulated a desire to make this joint meeting an annual affair. Favorable comments from those in attendance at the first meeting indicate possibilities for a larger and better meeting this year.

A complete program is not as yet available. Plans, however, include a number of papers on important phases of pulp and paper manufacture as well as accounting.

More detailed information as to program will be published in the next issue of THE PAPER INDUSTRY.

The local committee in charge of the program includes H. C. Bradford, Rex Paper Co.; Charles Barton, Michigan Paper Co.; A. C. Dreshfield, Paper Makers Chemical Corp.; Norman J. Cowie, Hawthorne Paper Co.; E. J. Turner, Paper Makers Chemical Corp.; E. F. Whittington, Sutherland Paper Co.

Cost and Technical Associations of the paper industry, Kalamazoo Valley Local Division, held their monthly meeting at the Park-American hotel, March 27. The principal speaker of the evening was Norman Cowie, of the Hawthorne Paper Co., the association's president. His subject was "The Thirteen Month Calendar."

V. G. Hinemuller, of the Kalbfleisch Corp., also gave a talk on the technical working basis for radio.

The Michigan Paper Mills Traffic Ass'n met Tuesday afternoon, April 3, in the Pythian building and re-elected all officers for the ensuing year as follows: President, Alex G. Gilman, president of the Allied Paper Mills; vice president, F. M. Hodge, president of the Kalamazoo Paper Co.; secretary, George S. Davis, secretary of the Allied Paper Mills; treasurer, C. Campbell, president of the First National Bank and Trust Co. and treasurer of the Kalamazoo Vegetable Parchment Co. The affairs of the association are said to be in excellent condition.

Mulch Paper May Replace Man and Hoe

The man with the hoe ere long may be a memory on gardens and farm in Michigan as a result of experiments being tried this year by local celery growers, truck farmers and market gardeners. They are preparing to use mulch paper to eradicate weeds and to bring earlier and bigger production. Twenty-five or more celery growers plan to test the new method. Gardens neatly papered as a parlor wall, with thriving crops unmarred by weeds, may be seen on these farms next summer.

Interest of celery growers in "paper" farming was aroused by an experiment last October by Jacob Bishop, 741 Getty Street, Muskegon, Michigan, who covered a small area, 8x8 feet, with artificial mulch.

The soil was unpromising and transplantation was late. The paper was on the ground four weeks when it was found that celery in the paper-covered area was equal, if not superior to the crop grown on more favorable soil.

Paper has been successfully employed as a mulch for many years. The method was first attempted in 1914 by C. F. Eckart on a sugar plantation in Hawaii. Favorable results have been obtained in virtually every experiment conducted by the federal department of agriculture and individual farmers.

The product sold for mulching purposes is black to absorb the sun's rays and is composed of two layers insulated by

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

WOOD TANKS

of Red Gulf Cypress
(The Wood Eternal)

We are equipped to make these tanks, either straight or tapered, in any size desired from 100 gallons to 100,000 gallons capacity, of Genuine Red Gulf Cypress, Douglas Fir, Long Leaf Yellow Pine, and other woods suitable for tanks.

Let us know your requirements

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

"We Win With Quality"

FITCHBURG DUCK MILLS

ESTABLISHED 1844

414 Duck Mill Road, FITCHBURG, MASS.

Manufacturers of

TRIUNE and MULTIPLE PLY

CANVAS DRYER FELTS

← { OUR NEW 300-INCH LOOM WHICH IS MAKING A DRYER FELT 288 INCHES IN WIDTH }

Fine Faced "English Woven" Felts for Fine Papers in Two, Three, Four, Five and Six Ply 60 Inches to 288 Inches in Width.

ABSOLUTELY NO FELT MARKS IN PAPER

TRIUNE Three Ply Felts for extra long service and large production

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

asphalt. Whenever employed, mulch paper eliminated the weed problem. It also preserves soil moisture and at the same time retains the sun's heat. Experiments prove that soil under paper has more moisture and is higher in temperature than unprotected ground.

In a recent issue of the Michigan Farmer, H. G. Putman describes results obtained last year when he used mulch paper in growing melons. He planted 120 hills of melons under paper May 12 and the crop began to ripen August 14. He estimated his profit on each hill planted under paper at $1.05.

Mr. Putman at the same time planted 400 hills in an open field. The crop began to ripen in September 12, nearly a month after the paper-covered crop, and he estimated his profit on each hill of the open crop at 17 cents.

M. Dale Ogden, formerly advertising manager and member of the sales organization of the Sutherland Paper Company, has resigned his active connections with that concern to enter the advertising department of the Crescent Engraving Company. Mr. Ogden will continue to handle the advertising for both the Sutherland and the Standard division of the Sutherland Paper Company and for the American Signs Corporation.

F. W. Sutherland, secretary of the Sutherland Paper Co., Kalamazoo, entertained those attending the Sutherland Paper night dinner at the Columbia hotel, March 19, with an account of some experiences encountered on his recent trip to France, Spain and Africa.

Arthur M. Adams, chief engineer of the Kalamazoo Paper Co., was recently elected president of the Chief Engineers Club to succeed E. C. Rutz, chief engineer of the Bryant Paper Co., who has filled the office for two and a half years. The executive board consists of: A. E. Woollam, manufacturers' agent and secretary-treasurer of the organization; Charles Roberts, Bryant Paper Co., chairman of the committee on arrangements, and Charles Neil, chief engineer of the Michigan Paper Co., Plainwell, chairman of committee on entertainment and speakers. The election followed a dinner and a program; Frank A. Simonds, Grand Rapids, spoke on The Ames Una-Flow Engine. The meeting was held at the Columbia hotel.

The importance of the paper industry to Kalamazoo was emphasized by Ralph A. Hayward, general manager of the Kalamazoo Vegetable Parchment Co., in address delivered at the March 26th meeting of the Rotary Club. In addition to reviewing the industry commercially, he also treated in a popular way the manufacture of paper, especially the employment of pulp and sulphite in making paper.

At the last meeting of the Michigan division of the American Pulp and Paper Mill Superintendents Association held Thursday, March 21st, at the Park-American hotel, Grellet N. Collins of the Bryant Paper Co. gave a talk on Paper-Mill Control. The meeting was very well attended.

The name of the American Spiral Pipe Works, Chicago, Illinois, manufacturers of Taylor Spiral riveted steel pipe, has been changed to Taylor Forge & Pipe Works. The change which is one of name only has been made for the convenience of the customers who were not wholly familiar with the company's wide range of products for high pressure service.

Sixten Sandberg, engineer at the Skutskär mill of the Stora Kopparbergs Bergslag Aktiebolagi, Sweden, is visiting the United States. The mill with which he is connected is one of the largest pulp producing plants in Europe.

The Brown Instrument Co., Philadelphia, Pa., announces the appointment of two vice presidents as follows: Charles H. Kerr, vice president and general manager; George W. Keller, vice president and general sales manager.

Felt Cleanliness

THE **Cleanliness** of your **Felts** is an important part of your paper making. Dirty felts give you trouble and greatly increase your cost by necessitating frequent shut-downs for felt changes and washing.

A **Felt Conditioner** which will clean the felt while it is running will greatly increase the efficiency of your plant. The Lansing Felt Conditioner will do that.

The **Felt** will be **kept soft.**

The **Life** of the **Felt** will be **Increased.**

The **Quality** of the **Sheet** will be **improved.**

Greater Production will result as the necessity of shutting down for felt washing will be practically eliminated.

The washing is done in nature's own way, with plain water.

Representative mills all over the country are now using this conditioner with satisfactory results.

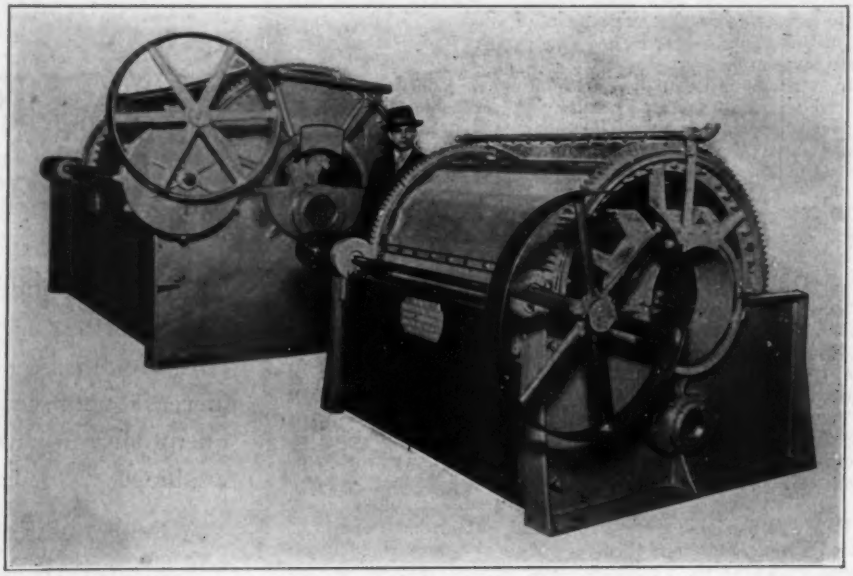
May we tell you more about it?

GILBERT J. SCOFIELD COMPANY, INC.

683 Broadway

ALBANY, N. Y.

Save-alls
Filters
(Wire cloth and Sponge)
Shredders
Granite Bed Plates
Rod Mills
(Block lining)
Kelly Shower Pipes
Cylinder Valves
Sheet Cutters
(For Rogers)



LOW INLET — CENTER INLET

GREEN BAY FOUNDRY & MACHINE WORKS
Green Bay, Wis., U. S. A.

Lindsay Spiral Weave Fourdrinier Wires
(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company
Collinwood Station CLEVELAND, OHIO

Changes in Seaman Paper Co. Personnel

Frank M. Stephens, vice president in the capacity of sales manager and mill contact man of the Seaman Paper Co., Chicago, has been made vice president and director of sales and a member of the directorate of the Bryant Paper Co., Kalamazoo, Mich., and will take up his new duties at once, it was announced April 5th, by Felix Pagenstecher, president of the Bryant Paper Co.

The move is by mutual arrangement between the Seaman and Bryant companies. The Seaman Company has acted as sales agent for the Bryant Company's product virtually since the inception of the Kalamazoo mill, and the change will even more closely cement the relationship between the two organizations. As mill contact man for the Seaman Company, Mr. Stephens has been closely associated with the Bryant mills for several years, and he now will be able to concentrate more directly and thoroughly on the products of the Bryant mills to the mutual advantage of both companies.

Peter J. Massey, until recently first vice president and general manager of the W. F. Hall Printing Co., Chicago, has been elected to succeed Mr. Stephens, and will take up his work at once as announced April 5th by George M. Seaman.

This move is regarded as significant of a new trend in the printing and paper industries to more closely correlate the two from technical and practical angles.

Association's Engineer Commended

The diligent untiring efforts of the men connected with the American Paper and Pulp Association—those who give the benefit of knowledge and experience in solving the problems of the paper manufacturer—are deeply appreciated by the mills for whose interests they labor, and an expression of this appreciation to the men deserving such commendation is always gratefully received.

Major O. M. Porter, secretary of the American Paper and Pulp Association, recently received such an expression in behalf of the efforts of the association's engineer, C. M. Baker. The Mohawk Valley Paper Co., Inc., Little Falls, N. Y., voiced its gratitude for Mr. Baker's services in connection with its problem of eliminating white water waste and stream pollution. The suggestion was made that more work of this character would be invaluable not only to that company, but to many others in the industry.

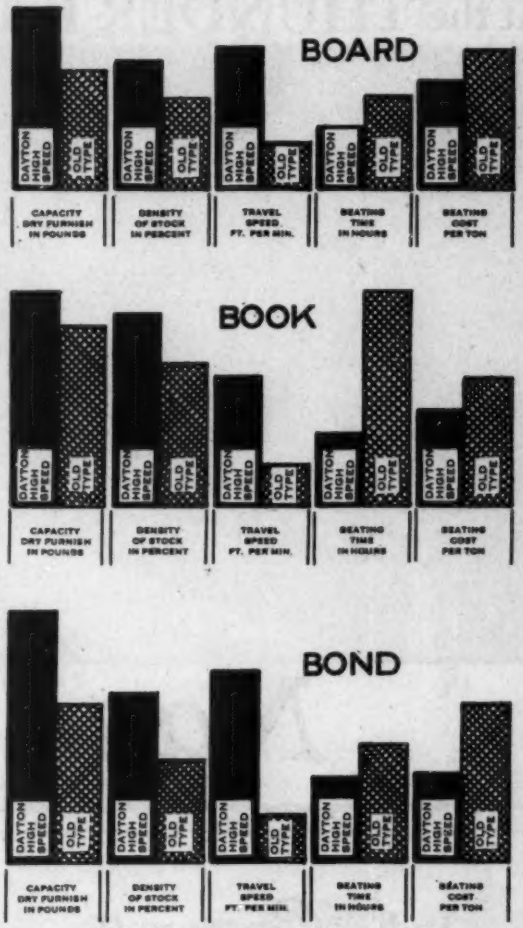
Major Porter has commented on this recommendation with the statement that the officers of the association have considered the development of a waste utilization and stream improvement service under Mr. Baker's direction as suggested by the Mohawk Valley Paper Co., and have only been prevented from doing so because of the association's limited income. It is evident, however, that if the value of Mr. Baker's service can be sold to others as effectively as it has been to the Mohawk Valley Paper Co., there will be no question as to the establishment of this valuable service to the paper industry.

S K F Industries, Inc., 40 East 34th street, New York City announces that its Buffalo office has been moved from 517 Manufacturers and Traders building to Main and Genesee streets; the Detroit office from 6520 Cass avenue to 2820 East Grand boulevard; and the San Francisco office from 115 New Montgomery street to 221 Eleventh street. The personnel of the various offices remains the same.

J. C. Lincoln, formerly president of the Lincoln Electric Co., Cleveland, Ohio, has been elected chairman of the Board of Directors. J. F. Lincoln, formerly vice president, has been promoted to the presidency.

Jacobson Engineering Co., pulp and paper mill engineers of Minneapolis, Minn., is in charge of extensive improvements at The Northwest Paper Co., Cloquet, Minn.

The Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has just been elected to membership in the Supply and Equipment Section of the American Paper and Pulp Association.



This diagram represents an average of test data obtained by actual performance on three different kinds of stock, namely Board, Book, and Bond—although equally substantial savings have been secured on other stock, including Bristol, Jute, Kraft, Rag, Rope, Tissues, Roofing, Waxing, etc. It also shows the relative increase or decrease in values covering the most vital points for comparison such as CAPACITY, DENSITY, TRAVEL SPEED, BEATING TIME and BEATING COST.

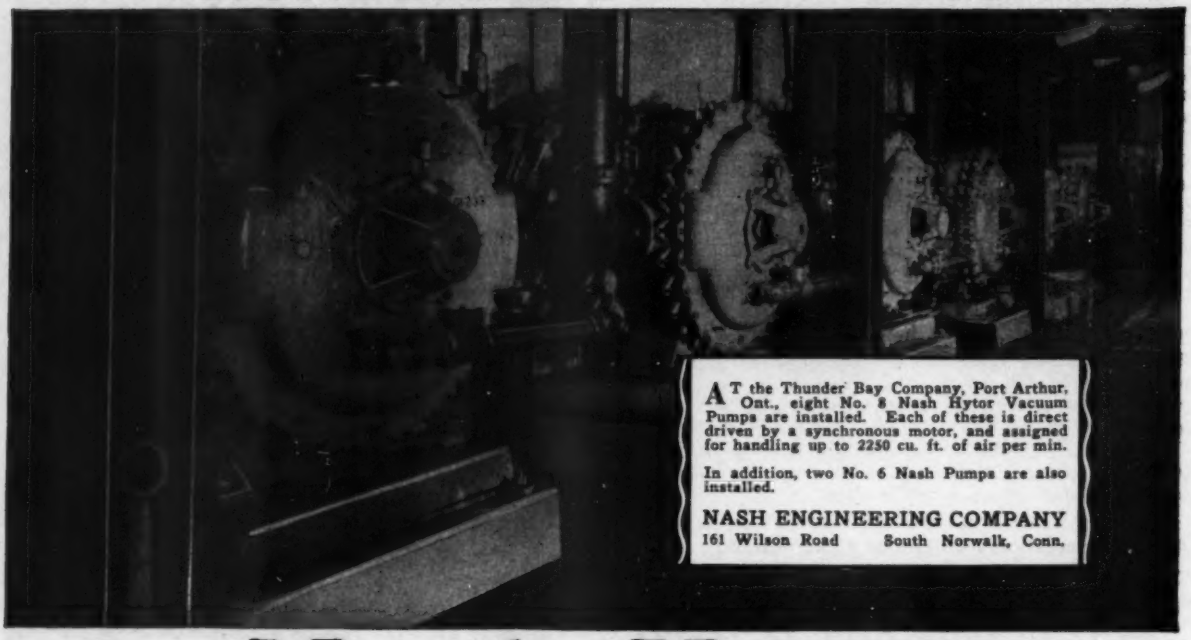
Certainly no more conclusive evidence need be presented to justify a serious investigation of Dayton High Speed Beaters.

The Dayton Beater & Hoist Company
Dayton, Ohio

E. K. Mansfield Co., 501 Fifth Ave., New York, N. Y.

DAYTON HIGH SPEED BEATERS

At the THUNDER BAY PAPER COMPANY



AT the Thunder Bay Company, Port Arthur, Ont., eight No. 8 Nash Hytor Vacuum Pumps are installed. Each of these is direct driven by a synchronous motor, and assigned for handling up to 2250 cu. ft. of air per min.

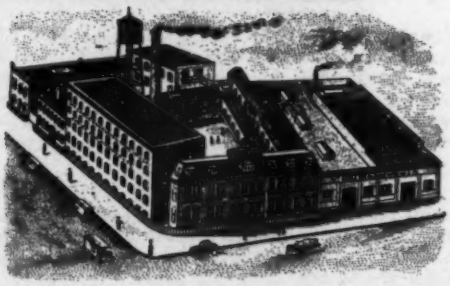
In addition, two No. 6 Nash Pumps are also installed.

NASH ENGINEERING COMPANY
161 Wilson Road South Norwalk, Conn.

Nash Hytor
VACUUM PUMPS AND COMPRESSORS

THE WM. CABBLE EXCELSIOR WIRE MFG. CO.
MANUFACTURERS OF
SUPERIOR FOURDRINIER WIRES

Backing Wires
Cylinder Faces & Washer Wires
Red Brass Brush Wire



For 80 Years we have specialized in the manufacture of brass Fourdrinier Wires, Cylinder Covers, Washer Wires and Save-all Wires as well as Phosphor Bronze Fourdrinier Wires and Cylinder Covers.

Established 1848

Offices and Warehouses:

74-88 Ainslie St.
143-151-163 Union Ave.
160-162 Union Ave.

BROOKLYN,
NEW YORK

❖ NORTHERN NEW YORK ❖

Forestry Notes

William Arthur Gallup of Boston, Mass., and his sister, Mrs. Andrew P. McKean of Troy, N. Y., have presented North Adams, Mass., a tract of 80 acres of land in the town of Stamford, Vt., near the watershed of Broad Brook, from which the water supply of North Adams is obtained.

The Board of Supervisors of St. Lewis County, New York State, will purchase a tract of 500 acres of land for reforestation purposes.

Frank H. Rich of Richville, chairman of the Board of Supervisors of St. Lawrence County, George W. Sisson, Potsdam, president of the Empire State Forestry association and John E. Keib, reforestation expert of the Northern New York Utilities, Inc. of Watertown, and the St. Regis Paper Company, attained a hearing at Albany on several reforestation bills. The St. Regis company representative announced that his company will extend its nurseries and lay out 4,000,000 trees within the next few months and 5,000,000 trees next spring.

The concurrent resolution introduced in the legislature by Assemblyman Clarence L. Fisher at Albany, and which allows the State to contract debts to supress forest fires has received favorable action in the House.

Lumbering operations of the Gould Paper Co.'s lumber camps at North Lake are completed. Since the work opened in January, 17,000 cords of pulpwood have been hauled to the Moose River ready for the spring drive.

Passage of the Hewitt bill, now before the state legislature, would mean that the 14,682 acres of idle land in Jefferson County, New York State, would be made available for reforestation purposes by the State.

An analysis of reforesting activities in New York State for the past 28 years, by Conservation Commissioner Alexander McDonald, shows that tree-planting, begun in the Adirondacks, has extended to every county in the State and that planting outside of the Adirondacks and Catskill Mountains today far exceeds, both in the number of plantations and the number of trees, those in the Adirondack and Catskill regions. Franklin County leads all others with 729 plantations and 21,164,725 trees. The total number of plantations in the State at the close of 1928 was 19,198, made up of more than 160,000,000 trees. Lewis county stands third with Essex county second. In New York City, where reforestation would hardly be expected, there are 101 plantations with a total of 574,201 trees mostly in parks and for water supply protection.

Several changes in the engineering and foundry departments of the Bagley and Sewall Company of Watertown, have been announced. Edwin E. Martin, Watertown, who has been in the engineering department of the company for the past 34 years and for the past nine years held the title of chief draftsman, has been promoted to chief engineer and given charge of the engineering department. A. G. Trahan, Watertown, who for the past 12 years has held the position as foundry foreman, has retired because of ill health. He will remain in the employ of the company in a consulting capacity. Thomas A. Lynch, Watertown, takes the position of foundry foreman. He has been assistant foundry foreman for 12 years. R. F. Dasno, will take Mr. Lynch's position.

The Toombs Corp. of Carthage, N. Y., has moved its plant to Boonville, N. Y., and started operations. The Toombs Corporation manufactures paper boxes.

The St. Regis Paper Company of Watertown, has won the first step in its fight for reasonable newsprint rates before the Interstate Commerce Commission. The company's complaint charged that the rail rates on newsprint paper from its mills at Norwood, Deferiet, Carthage, Norfolk and Raymondville, N. Y. to destinations in Pennsylvania, Illinois, Indiana,

Name it — We have it

There are all kinds of paper mills and all kinds of paper machines in them. There are all sorts of operating conditions and all sorts of felting needs.

We weave fine felts with which to serve those many and varied felting requirements, and can send you a felt adapted to any condition you may describe.

Nor are we ever hesitant about placing Orrs in competition with other felts to determine which leads in water removal qualities, or in ability to stand hard wear.

Send your next felt order to Piqua.

The ORR FELT & BLANKET CO.
Piqua, Ohio

ORR FELTS

Davis Regulators get their action from the force of Gravity

It is one force which never fails or varies, so nature is made to serve in the operation of Davis Regulators. This is characteristic of Davis engineering and one reason why you get such good service from Davis Pressure Regulators. First in America—first in efficiency.

G. M. DAVIS REGULATOR CO.
414 Milwaukee Ave.
Chicago, Illinois

DAVIS AUTOMATIC VALVE SPECIALTIES

P14-Gray

AND HERE'S THE REASON WHY

Fig. 102
Bronze "White Star" Globe Valve

UPON design, workmanship, and materials depends efficient valve service. It is because of these essentials that Powell Valves have been established as standards in the paper industry.

Powell Products include bronze, iron and steel valves; oilers, lubricators, grease cups, water and oil gauges, etc.

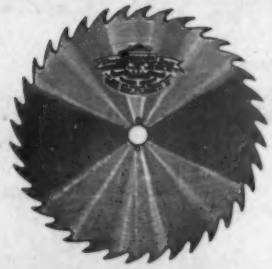
THE WM. POWELL CO.
2525 Spring Grove Ave.
CINCINNATI, OHIO

Change to--Standardize on

POWELL VALVES

SIMONDS

Circular Saws and Machine Knives



For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

Simonds Saw and Steel Co.

Established 1832
Fitchburg, Mass.

Boston Chicago

1864 1929

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

Sold by
BULKLEY, DUNTON & COMPANY,
75-77 Duane Street, N. Y.
and direct

Ohio, Michigan, Missouri, Kentucky and West Virginia, were unjust and preferential of its competitors in New England, New York, Indiana, Wisconsin, Minnesota and Canada. The Commission's presiding examiner recommended that the assailed rates be found unreasonable as charged, to the extent that they exceed a distance scale which he prepared.

A new type of ship designed to carry newsprint to the Chicago Tribune will make its appearance on the St. Lawrence River this spring. It is now being constructed in Hull, England, for the Quebec and Ontario Transportation Company, which is a subsidiary of the Ontario Paper Company.

The Climax Manufacturing Co. of Castorland, N. Y. has won the first step of what points to a decisive victory before the Interstate Commerce Commission relative to its attempt to reduce the rates on paper boxes shipped between Castorland and Washington, D. C.

Installation of additional new machinery in the plant of the Taggart-Oswego Paper and Bag Corp. at Oswego, N. Y., will be made within the next few months with a view to greatly increasing production. This may mean the purchase of a new kraft machine, which will greatly increase the production of paper for the bag department. This announcement was made following an inspection of the plant by J. T. Teran of the Bates Valve Bag Corp., which has taken over the management of all of the kraft mills in the St. Regis Paper Co. system.

The Dexter Sulphite Pulp and Paper Co. of Dexter, N. Y., and the Sherman Paper Co. of Watertown, N. Y., have obtained an option on a site involving 600 feet of river front on the St. Lawrence River near Morristown, N. Y. for the establishment of a pulpwood terminal. Establishment of a sulphite or other kind of mill may be made in the near future it has been learned.

The Black River Paper Co., Watertown, N. Y., has purchased the Mack Paper Co., of Watertown. This makes five competitive concerns the Black River company has purchased in the past ten years. Allen S. Perkins, president of the Black River company, is a pioneer wholesale paper jobber in Northern New York.

Fred C. Anderson of Watertown, N. Y., who for the past several years has been interested in the paper mill engineering business, has become associated with the Watertown office of the Tucker, Anthony Company, stock brokers and members of the New York and Boston stock exchanges.

Joseph Gokey, an employee of the Harrisville Paper Co., Harrisville, N. Y., had the first three fingers on his right hand taken off when a buzz planer, he was operating, struck a knot. Marvin Hall, also employed in the mill, had his hand and arm badly burned when it became caught in the calender stacks of a paper machine.

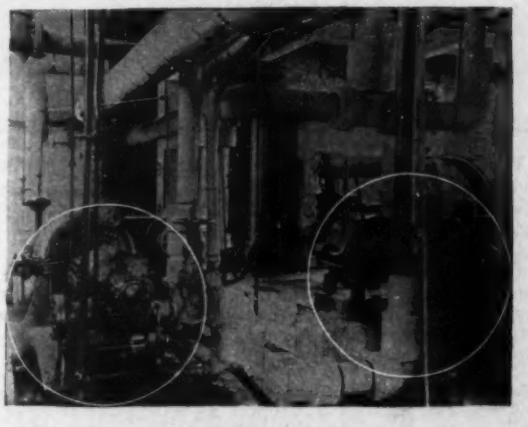
Sherman Ash, head of the finishing department of the Taggart Paper Mill in Carthage, N. Y., suffered a badly crushed foot when it became caught in an electric hoister.

Earl Kerr received a fractured pelvis and internal injuries when a heavy weight fell on him while employed by the Unionville Mills of the Racquette River Paper Company at Potsdam, N. Y.

Allan & Gray, prominent paper merchants, have moved from 54 Beekman street to 30-32 West Fiftieth street, New York, where they occupy the first two floors and basement.

The Vulcan Soot Cleaner Co., Du Bois, Pa., announces the opening of a New York office under the direction of Fred W. Linaker, vice president, assisted by C. H. Baker, at 120 Liberty street, New York, N. Y.

Warren design meets increased pressures



At Hodge, Louisiana, the Southern Advance Bag and Paper Co. has recently built and equipped one of the most modern and efficient paper mills in the country.

The two Warren boiler feed pumps installed in this plant (shown above) are working against 450 pounds pressure—typical of the advanced engineering practice employed throughout the mill. Forty-seven other Warren Centrifugal Pumps are used for all sorts of service, including the handling of various liquors, water and pulped stock.

Warren Pumps have kept pace with increased pressures and their economical operation and sustained high efficiencies are the reasons why you find them in the pulp and paper mills that set the best examples of engineering practice. Write for Bulletins.

Warren

Steam Pump Company Inc. — Warren Massachusetts

Atlanta Boston Charlotte — Cleveland Dallas Kansas City St. Paul — New Orleans New York Oklahoma City — Philadelphia Pittsburgh San Francisco Toronto — Scranton Seattle St. Louis

2375

PAPERMILL MACHINERY FOR SALE

72" Trim Complete Board Machine, 6 cylinder—6 presses, 61 dryers 36" diam.; drives, pumps, variable speed engine, blower, etc.
Good Parts of 90" Trim Paper Machine—except Wet End and presses—14 dryers 48" diam., calenders, reel, Moore & White slitter and winder.
Beloit Triplex Pump 11" x 10".
Gould Triplex Pump 8" x 12".
Noble & Wood, Emerson, and Horne Jordans, of various capacity.
Two 60" Hamblet sheeters with Moore & White Layboys, six roll back stands.
Seybold Paper Cutters—65" and 74".
Cameron Langston and Kidder slitters—different widths.
60" face—9 roll Farrel Stack of calenders with doctors.

Send us your inquiries.

GIBBS-BROWER COMPANY, Inc.
Paper and Pulp Mill Brokers
261 Broadway, New York City
OUR MOTTO—"Service First"

BETTER SERVICE
on

Hard maple and gum wood press rolls
Brass tube rolls
Bronze couch and breast rolls
Brass, Iron and Wood felt rolls
Copper covered felt rolls
Brass covered felt rolls
White wood felt rolls
Iron cores for rubber covered press and felt rolls
Bronze suction box covers
Hercules car movers

All rolls balanced

We would be very glad to submit information and quotations on all products. Just drop us a card.

J. W. Hewitt Machine Company
Paper Mill Machinery
Neenah Wisconsin

Wanted—Paper Mill Superintendent; must be experienced, and competent to take complete charge of new mill making news. Give full particulars. Address Box 153, The Paper Industry.

SUPERINTENDENT OR PRODUCTION MANAGER—For Board Mill wants to make a change. Knows how to get results and increase production. Address Box 155, The Paper Industry.

USED JORDANS—7-Large Jordans, some belt drive and some direct connected to motors, including motors and starters, all in good condition and at extremely low prices. If interested, write us quickly, describing your requirements. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

FOR SALE—One slightly used Noble & Wood Mammoth Jordan together with 500 HP motor and coupling. It is also equipped with pulley for belt drive, if preferred. Price and particulars upon request. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

Paper Mill Machinery

One No. 2 Bird Screen

Two Walpole Screens used only two years

One 156" Hamblet Duplex Cutter and Layboy, used very little

One 72" Kidder Slitter

One 130" M. & W. four drum Winder

One 134" P. & J. Uniform Speed Reel

One 76" S. & W. Under cut cutter

Two 69" S. & W. Under cut cutters

For Sale By:

FRANK H. DAVIS COMPANY
175 Richdale Avenue, CAMBRIDGE, MASS.

Capable executive—now employed, wishes to make a change. Twelve years experience in Machine Manufacturing plant, Finances, Purchasing, Costs, Production, Traffic, etc. Reasonable salary with future. Go anywhere, preference Pacific Coast. Address Box 152, The Paper Industry.

MECHANICAL DESIGN DRAFTSMAN WANTED—For layout and design on paper and pulp mill machinery and equipment. Location central Wisconsin. Permanent for experienced and capable man. Give full particulars and salary in first letter. Address Box 154, The Paper Industry.

It Pays to Advertise Opportunities in this Opportunity Section

Instruments for Calipering, Weighing and Testing Paper and Box Board:

Automatic Micrometer Calipers
Automatic Board Scales
Automatic Tissue Scales
Automatic Paper Scales
Automatic Felt Scales
Electric Board and Paper Testers (Automatic)

E. J. CADY & COMPANY
549 W. Washington Blvd., Chicago, Ill.

❖ NEW YORK CITY ❖

Orval A. Wales, of Johaneson, Wales & Sparre, Inc., was re-elected president of the Association of American Wood Pulp Importers at the annual meeting and election of that organization held in the Uptown Club, New York. George W. Oliphant, of Castle & Overton, Inc., was elected vice president, succeeding Stanley C. Willey, of Atterbury Brothers, Inc., while William H. Anders, of the Perkins-Goodwin Company, was re-elected treasurer, and R. D. Hull, of the Mead Sales Company, Inc., was chosen secretary to succeed Edwin B. Ericksen, of Pagel, Horton & Company, Inc., who resigned. These four officers, together with Fred Enders, of Bulkley, Dunton & Company, comprise the Board of Directors of the Association. Howard E. Atterbury, of Atterbury Brothers, Inc., was again named national councilor, and J. A. Millar, of the Perkins-Goodwin Company, substitute councilor.

Paper Merchants Hold Meeting

The annual meeting and election of officers of the Paper Association of New York, whose membership comprises most of the foremost paper merchandising concerns in the metropolitan district, was held on March 21 at the Arkwright Club. William H. Holden, of George W. Millar & Company, Inc., was re-elected president for the ensuing year, while Oswald F. Marquardt, of Marquardt, Blake & Decker, was elected vice president in charge of the Fine Paper Division, and Rudolph L. Walton, of D. S. Walton & Company, was re-elected vice president in charge of the Wrapping Paper Division. H. B. Thurston, of Conrow Bros., was again chosen treasurer, and Irwin Slote, of 41 Park Row, New York, was re-elected secretary.

William E. Ebbets, of Coy, Disbrow & Company, and Elwin Walker, of the Walker Goulard Plehn Company, Inc., both of the Wrapping Paper Division, and Bert E. Linde, of the J. E. Linde Paper Company, and Robert Schmidt, of the Miller & Wright Paper Company, both of the Fine Paper Division, were elected to fill vacancies on the Board of Directors of the Association. Following the meeting an elegant dinner was served and afterward a fine vaudeville entertainment was put on.

A. R. Graustein Married

Friends in the industry of Archibald R. Graustein, president of the International Paper Company, were interested in learning of the marriage of Mr. Graustein to Miss Claire Patton on March 13 in El Paso, Texas. The wedding came as rather a surprise. County Judge E. B. McClintock, of El Paso, officiated. Both of the principals gave New York as their residence.

Mr. Graustein had gained a wide reputation in New England as a corporation lawyer prior to being elected president of the International Paper Company a few years ago, and meanwhile he has played a prominent part in the reorganization of the I. P. and other paper companies. He was graduated from Harvard University in 1904 and from the Harvard Law School in 1907. Besides heading the largest paper manufacturing company on the North American Continent, he is a director of the Missouri Pacific Railroad, Corn Exchange Bank, Northeastern Power Company, American Surety Company and the Manville-Jenckes Company.

Walter T. Clark, of Darmstadt, Scott & Courtney, Inc., paper mill supply dealers and importers of 150 Nassau street, New York, enjoyed a short vacation trip to Cuba during March.

E. Harry Taylor, who for the last ten years has been associated with the Beekman Paper and Card Company, of New York, has been made secretary of the Sill Paper Com-

"Send this paper every time"!

WHAT paper manufacturer doesn't like to have users speak that way about his paper?

A user who feels that way toward a certain paper knows how dependable it is—he knows from experience that it saves him worry and trouble, and he insists upon getting it.

Behind such a paper is a manufacturer who himself places a high value upon dependability. He also insists upon supplies and equipment of proved merit—particularly does he recognize the value of dependable Fourdrinier Wires.

That is why papers of every kind, from the finest tissues and cigarette papers, to heavy wrapping and roofing papers are made on Tyler Fourdrinier Wires.

Let us send you a small sample so that you may see for yourself the firm weave and uniform mesh.

TYLER WIRES

for screening WOOD CHIPS

HUM-MER *Electric* SCREEN

Send for literature

The W. S. TYLER COMPANY
CLEVELAND, OHIO

Alvin H. Johnson, M. E. Frederick Wierk, M. E.

JOHNSON & WIERK

Consulting Engineers

Grand Central Terminal Bldg.
NEW YORK

Reports, Design, & Construction Supervision
Steam, Hydraulic & Electric Power Plants.
Complete Mill or Equipment Layouts.

H. S. TAYLOR, Consulting Engineer

Member Am. Soc. C. E.—Member Am. Soc. M. E.
Member Eng. Inst. Can.—Member A. I. E. E.

PULP, PAPER AND FIBRE MILLS
HYDRO-ELECTRIC AND STEAM POWER PLANTS
PLANS—SPECIFICATIONS—EVALUATIONS—REPORTS
CONSULTATIONS

Jefferson St. Arcade, Dayton, O., Guarantee Bldg., Montreal, P. Q.

D. Manson Sutherland, Jr.

Consulting Chemical Engineer

Special Fibre Products and Processes
Homogeneous Boards
Waterproofing Compositions
Purification of Effluents
Forming and Drying Machines
Utilization of Waste Fibres

Broad Street Bank Building
TRENTON, N. J.

New York Office:
341 Madison Ave.

KARL A. LEFREN

Consulting Engineer
Member A. S. M. E.

171 Madison Ave., New York City

INDUSTRIAL POWER REPORTS
PAPER AND BOARD MILLS DESIGNS
MILL CONSTRUCTION CONSTRUCTION

V. D. SIMONS

Industrial Engineer

PULP AND PAPER MILLS, HYDRO-ELECTRIC
AND STEAM POWER PLANTS
ELECTRIFICATION PAPER MILL PROPERTIES

435 NORTH MICHIGAN AVE.
TRIBUNE TOWER
CHICAGO

James L. Carey

Paper Mill Architect and Engineer
208 N. Laramie Ave.,
Chicago

Cable Address: ASCAR, Chicago
Codes ABC 5th Western Union

GEORGE F. HARDY

M. AM. SOC. C. E.
M. AM. SOC. M. E.
M. ENG. INST. CAN.

Mill Architect and Consulting Engineer

Langdon Building

305-309 Broadway, New York

SPECIALTY:

Paper, Pulp and Fibre Mills
Water Power Development
Steam Power Plants
Plans and Specifications
Valuations, Reports
Consultation

Cable Address:
"Hardistock"
A. B. C. 5th Edition
Bedford McNeill
Western Union
Bentley's

FERGUSON ENGINEERS

JOHN F. FERGUSON

Complete Pulp & Paper Mills, Investigation of New Enterprises, Special Heat & Power Applications, Hydro-Electric Developments, Steam-Electric Power Systems, Sectionalized Paper Machine Drives.

Analysis, Design, Construction, Operation Efficiency

Holyoke, Mass. Monadnock Bldg., CHICAGO, ILL.

HARDY S. FERGUSON & COMPANY

CONSULTING ENGINEERS

200 FIFTH AVENUE NEW YORK CITY

Hardy S. Ferguson—*Member A.S.C.E. A.S.M.E. E.I.C.*
Moses H. Teaze—*Member A.S.M.E. E.I.C.*
J. Wallace Tower—*Member A.S.C.E. A.S.M.E.*

Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

PULP AND PAPER MILLS
AND OTHER INDUSTRIAL PLANTS
STEAM AND HYDRO-ELECTRIC
POWER PLANTS
DAMS AND OTHER HYDRAULIC
STRUCTURES

Pulp and Paper Mills, Power Plants, Chemical Plants

Engineering Design
Construction Supervision
Mechanical Equipment
Surveys
Investigations
Management
Process Development
Waste Utilization
Fuel Economy
Valuations

Arthur D. Little, Inc.

Chemists : Engineers : Managers

30 CHARLES RIVER ROAD CAMBRIDGE, MASS.

pany, of 200 Fifth avenue, New York. Walter G. Sill, president of the latter company, due to the rapid growth of his business, found it necessary to be relieved of some of his duties, and Mr. Taylor, who has been in the paper trade for over 20 years, was chosen by him for the position.

A rumor which was going the rounds of the New York City paper trade, and which appeared to be given a good deal of credence in some quarters, to the effect that a consolidation of the International Paper Company and the St. Regis Paper Company had been proposed, with F. L. Carlisle to head the combined company, was flatly denied by officials of both companies who declared there was no foundation for the rumor.

In a report just issued for the year ended December 31, 1928, the Union Bag and Paper Corporation reports a net loss of $150,414 after depreciation, interest, inventory adjustments, etc., as compared with a let loss of $544,961 after inventory adjustments, amortization of discounts and premiums on bonds in the liquidating of losses and experimental costs written off, and depreciation and interest, in 1927.

The R. T. Vanderbilt Company, Inc., suppliers of clay to paper mills, is now located in its new offices in the new New York Central Building at 230 Park avenue, New York. The telephone number remains the same, Vanderbilt 6864.

Sven C. Lindberg, chemical engineer, formerly holding the position of superintendent with the West Virginia Pulp and Paper Company, the Oxford Paper Company, and the Union Bag and Paper Corporation, and who has been in Sweden during the last several years engaged in managing and constructing pulp mills, has returned to the United States as representative of the Erkens Corporation, with offices at 122 East Forty-second street, New York.

A petition in bankruptcy was filed on March 21 by the Continental Products Corporation, manufacturer of paper umbrellas at Spring Valley, N. Y. Liabilities are put at $10,122, and assets at $5,859, principal item of which is patents valued at $2,500.

James S. Watson Vice President of Link-Belt

The Link-Belt Company, Chicago, makes announcement of the election of James S. Watson as vice president of the company, with headquarters at the company's Dodge Works in Indianapolis, Ind.

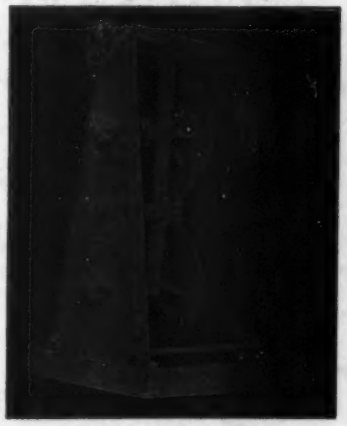
Mr. Watson has been with the company continuously for thirty-four years, having entered the employ of its Philadelphia plant when quite a young man. For the past nine years he has been located at the Dodge Works as general manager in full charge, and from which point he will continue to be responsible for the production and sale of Link-Belt silent and roller chain drives.

Stebbins Engineering & Mfg. Co.
Chemical Pulp Mill Engineers
WATERTOWN, N. Y.
Digester, Acid Proof and other Guaranteed Linings.
Chemipulp Cooking and Recovery Process.

MORRIS
CENTRIFUGAL PUMPS
Write for complete information on Non-Clogging Pumps for handling Pulp.
MORRIS MACHINE WORKS, Baldwinsville, N. Y.

STANDING ROOM ONLY!

You probably have found yourself in need of a LEWELLEN Variable Speed Transmission but you may have been at a loss to know where to locate it, owing to your limited space available, on floor or ceiling.



At left the LEWELLEN Vertical Variable Speed Transmission. In this illustration, this transmission is mounted upon a special base, which may be furnished with any size Vertical Transmission, at small additional cost.

The LEWELLEN Vertical Transmission was designed for just such a situation. It occupies very little floor space. It is sturdily built, and will perform all the functions of the LEWELLEN Standard Transmission. It may be furnished with pads upon the upper frame member, to support a driving motor. It may also be equipped with remote manual or automatic control, either mechanically or electrically operated.

The LEWELLEN Vertical Transmission may be completely enclosed, if desired. This makes a particularly desirable installation, where women are operating adjacent machinery.

In designing the LEWELLEN Variable Speed Transmissions, our engineers keep in mind the adaptation of the LEWELLEN to your particular requirements. We shall be glad to submit blue-prints, showing how the LEWELLEN Transmission may be fitted into your operation, to get the most profitable results for you.

LEWELLEN MANUFACTURING COMPANY
COLUMBUS INDIANA

SCHOPPER

STRENGTH TESTERS

for Paper and Board of Every Description

Model 482 Electric Drive
Equipped with Graphic Recorder

Over 200 models to choose from.

Capacities from 1 lb. up to 3000 lbs.

Adapted for hand, hydraulic, belt, gravity and electric motor drives.

All metal construction.

With, or without graphic recorder.

Strength and elongation determined in a single operation.

Absolute accuracy; most modern design; rugged construction, easy operation.

Write us regarding your requirements.

The complete SCHOPPER line includes these standard testers:—

Model	218	Standard Desk Micrometer
"	367	Full Sheet Paper Scale
"	211	Folding Endurance Tester
"	418	Schopper-Riegler Beating Tester
"	469	Improved Densometer
"	438	Expansion Tester
"	468	Conditioning Oven

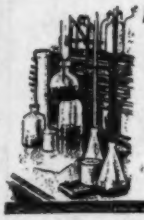
and many others.

96 PAGE CATALOG SENT FREE ON REQUEST

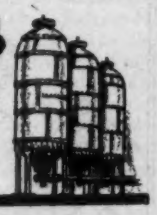
FOREIGN PAPER MILLS, Inc.

72 DUANE STREET NEW YORK, N. Y.

Sole agents for United States and Canada



Technical Developments in the Paper Industry



Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Sulphite Cellulose Digestion

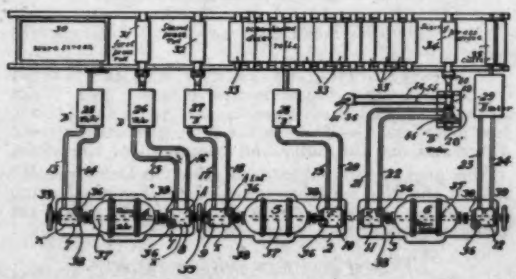
IT IS pointed out that the organic substances, which are dissolved in the digestion liquor, act as consumers of sulphurous acid during the digestion process, when an increase in the concentration of the latter takes place. The absorption of sulphurous acid is a time reaction, which lasts until a state of equilibrium sets in. The reaction is reversible, the sulphurous acid being combined in loosely held form (compare Cellulosechemie, volume 8, pages 117ff, 1927). This circumstance complicates the digestion process.

The composition of the digestion liquor, which is being tested, can vary during the slow cooling of a sample to be used for titration. When the dissolving out of the organic substances (primary reaction) takes place more quickly than the reaction of these substances with sulphurous acid (secondary reaction), then the existence of an unstable state of affairs is indicated. The temperature sensitivity of the primary products can be different from that of the decomposition products. It appears uncertain whether or not the change of the speed of solution of the organic substances runs parallel with that of the speed of decomposition at the same temperature.

When a vertical digester is employed, then different pressures and temperatures will be found to exist at different levels in the apparatus. This brings about variation in the quality of the pulp and in the consumption of sulphurous acid. It is therefore highly necessary to circulate the liquor as thoroughly as possible. Either gas or liquid circulation systems are used in practical work. The first system serves to give the liquor at different heights in the digester different proportion of sulphur dioxide content. The chemical reactions will therefore take place differently at different points in the apparatus. Liquid circulation may be carried out in two ways, namely, from the bottom upwards and from the top downwards. The first method is the preferable one. E. Oeman, Svensk. Papp. Tidn. volume 31, pages 259ff, 1928.

Variable Speed Paper Machine Drive

A DRIVE mechanism for different sections of a papermaking machine consists of a main motor, a number of pumps which are operated by this motor. Means for individually adjusting the capacity of the pumps comprise a



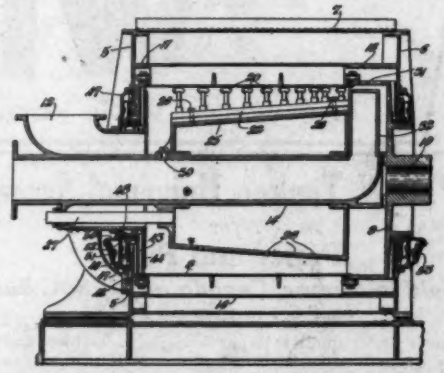
shaft, sleeves on the shaft, one end of each of the sleeves being provided with a pinion gear. These pinion gears mesh with second gears which are themselves connected to the pumps for adjusting the capacity of the latter. The sleeves are individually operated. H. F. Dunbar, Turners Falls, Mass. United States Patent No. 1,689,189.

Half Stuff from Hemp Waste

THE raw material was digested for 6 to 8 hours at three atmospheres pressure, then screened, and bleached with chloride of lime solution. The bleached stock is digested again and rebleached. The author tried to make a pulp by the chlorinating process in which the disintegrated raw material is treated with ten per cent caustic soda (three per cent concentration). The liquor is removed after two hours and the raw material is chlorinated. The consumption of chlorine is ten per cent. A. Fast, Bumaschnaja Promischlennost, volume 7, page 458ff.

Pulp Screening Machine

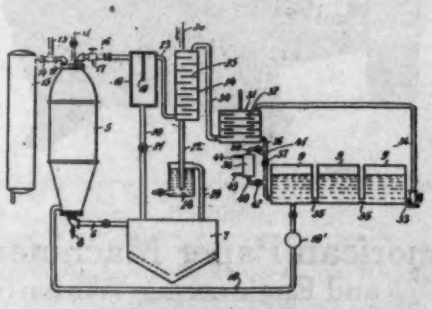
THE pulp screening machine is provided with a rotary screen and means for conducting the pulp into the screen. A stationary support is provided in the screen and members



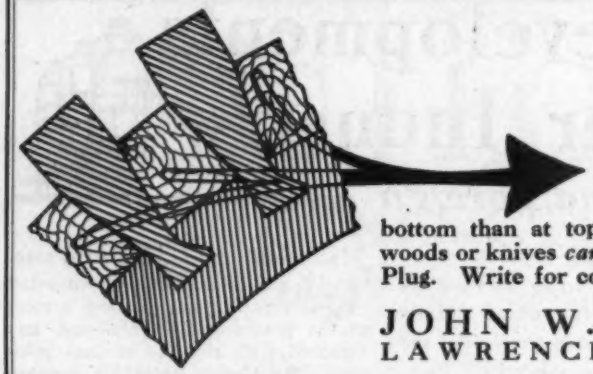
are attached to this support and used to advance the tailings step by step through the machine. A. J. Haug, Nashua, N. H. United States Patent No. 1,696,354.

Acid Sulphite Pulp Process

THE apparatus consists of the usual type of digester, acid storage tanks and an absorber. Means are provided for circulating the contents of the storage tanks through the



absorber and for delivering the gas from the digester to the absorber. A feature of the apparatus is a device, which is located between the digester and the absorber for the removal of the moisture and fiber from the gas. R. B. Wolf, New York, N. Y. United States Patent No. 1,699,556.



INVERTED WEDGES

The biggest improvement in Jordan engineering in years. Look at the diagram! Wedge woods larger at bottom than at top—just the opposite of the old style construction—woods or knives *cannot* come out. Available only in the Bolton Bandless Plug. Write for complete information.

JOHN W. BOLTON & SONS, INC.
LAWRENCE . . . . MASSACHUSETTS

2747

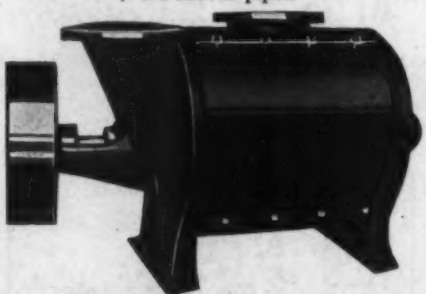
EASTWOOD
FOURDRINIER-CYLINDER-WASHER
WIRES

EASTWOOD WIRE CORPORATION, BELLEVILLE N.J. U.S.A.

APMEW Timken Universal Screen
for
Paper and Pulp
17 Sold in Europe, Canada and U.S.A. during last 6 months of 1928

Produces finest quality Paper and Pulp. 90 tons daily capacity groundwood with .065" plates. 20 H.P. consumed for 90 tons production. .3% to 1% Screening Consistency. Tailings under control.

No mixing of air. No foaming. No lumps. No spilling. No shower pipes.



May we assist your Company to increase its earnings

ASK US.

American Paper Machinery and Engineering Works

GLENS FALLS, N. Y.

Canadian Manufacturer — Paper Mill Equipment, Ltd., 413 Drummond Building, Montreal, Que.

Pulp Screens — Centrifugal Stock Pumps — Rotary Sulphur Burners

Clean Pipe Lines All of the Time

Slimy pipe lines mean dirty paper and consequently —waste.

It is easy to avoid this trouble with the Hayton Go-Devil. This instrument cleans pipe lines mechanically with no trouble and in a short time. Just insert the Go-Devil in the pipe, turn on the fresh water and out the other end comes all of the slime.

The propeller-like blades of the Go-Devil revolve against the pipe walls scraping off the fungus, leaving a clean line. By means of a strong flexible spring the bends are negotiated with ease.

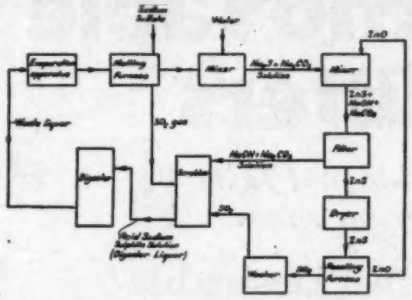
We will gladly furnish any further information you may desire

HAYTON PUMP AND BLOWER CO.

Appleton, Wisconsin

Treating Waste Liquor

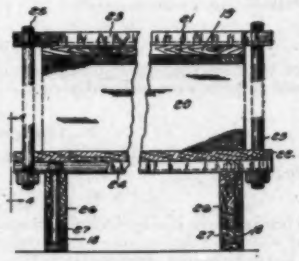
THE waste liquor which is obtained in the production of paper pulp by boiling with acid sodium sulphite solution consists first in evaporating the liquor. After this, the combustible matter of the evaporated mass is burned in such a manner that the sodium compounds present in the waste



liquor are transformed into sodium sulphide and soda. The combustion residue is then dissolved in water and treated with an oxide of such metals, the sulphur compounds of which are insoluble in caustic soda lye, so that all of the sodium sulphide is transformed into sodium hydrate. After the solution has been freed of its sodium sulphide content in this manner and the precipitate has been separated, the liquor is treated with sulphur dioxide for the purpose of producing fresh digester liquor. E. L. Rinman, Djursholm, Sweden. United States Patent No. 1,699,808.

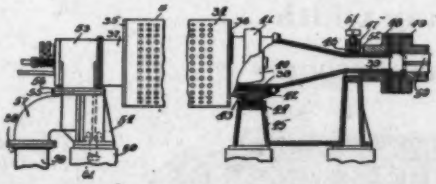
Apparatus for Packing Paper

THE sheets of paper are held together under heavy compression during shipment. A rigid metallic band (23) encircles the stack of paper and is adapted to bear upon the upper and lower faces of the stack. Skids (27) are secured to the metallic band so as to maintain the lower part of the frame and the stack a sufficient distance above the ground so as to receive an elevating truck underneath. W. C. Ludwig, Chillicothe, O., assignor, The Mead Pulp and Paper Co., Dayton, O. United States Patent No. 1,696,008.



Removable Fourdrinier Table Structure in Papermachine

THE fourdrinier table structure in the papermaking machine is removable. This structure is also combined with a cantilever type couch which is adapted to be supported



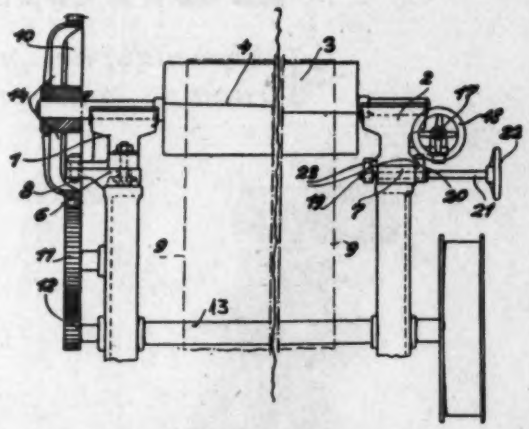
from one end to permit the insertion of a loop of a fourdrinier wire over the other end. A. Aldrich and E. E. Berry, Beloit, Wis., assignors, Beloit Iron Works. United States Patent No. 1,700,301.

Pivoted Cutting Device for Moving Paper Web

IT OFTEN happens that when a paper web is cut transversely or longitudinally the edges are not at right angles with each other. This disadvantage is overcome by the new form of cutting device which is illustrated in the accompanying figure.

The apparatus consists of the rotating knife drum (3), which is provided with a number of longitudinal knives (4) and which runs in the bearings (1) and (2). There is also a knife beam which is not shown in the figure and which serves to take up the cutting effect of the knife against the paper web. This beam may be supported in bearings which are located at a definite distance from the knife drum bearings, and the whole apparatus is made in such a manner that the cutting device may be pivoted in and out of cutting position.

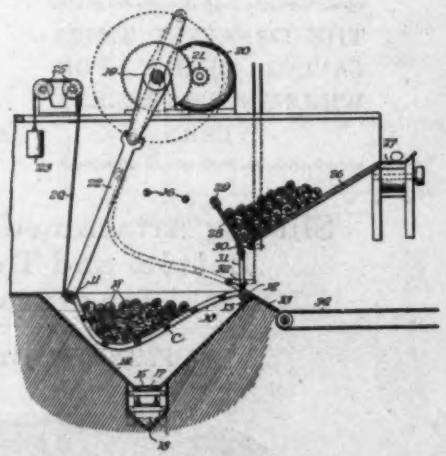
The knife drum (3) is driven by means of the gear wheels (10), (11), (12) and the shaft (13). When the knife drum is



swung into operating position it is locked by means of clamps (19) and (20). The handwheel (22) is used to fasten the clamps into position. German Patent No. 467,631, Jagenberg-Werke A. G., Duesseldorf, Germany.

Log Barking Apparatus

THE apparatus is provided with a cradle (C) which is seen to be supported in such a manner that it can be rocked. The logs are placed within this cradle and the rocking motion serves to cause them to rub up against each



other with the result that the bark is loosened and removed. At the right is also indicated the manner in which the logs are fed into the cradle. H. W. Guettler, Chicago, Ill. United States Patent No. 1,700,220, filed April 26, 1926.

Influence of Acids and Alkalies on the Formation of Slime in Pulp

A SERIES of ten experiments were carried out. The first eight experiments were carried out in an experimental beater with one kilogram charge and forty liters content. The density of the stock was 2.5 per cent on the absolutely

"M. & W." Removable Bottom Slitters

Especially designed for wide and fast-running paper machine drum winders

THE GREATEST TIME-SAVING DEVICE FOR WINDERS IN RECENT YEARS

New and Desirable Features

1 Bottom slitters supported by arms from a stationary bar exactly the same as the top slitters, and are independent and removable—and all driven independently from a small, slow-running shaft.

2 The troublesome high speed, large diameter bottom slitter shaft is dispensed with, and a smaller diameter shaft used, running one-third the speed, and in ball bearings in slitter arms.

3 Slitters are adjusted to width of sheet—same as the top slitters.

4 Disc slitters or double edge band slitters may be used, and are carried on small spindles on ball bearings.

5 The wear of slitters caused by the vibration of the heavy slitter shaft eliminated.

6 A bad cutting bottom slitter is more likely to be replaced by a good one and a clean edge made—Removing and resetting all slitters being unnecessary.

7 Labor saved by not handling the slitter shaft, heavy slitters, etc.

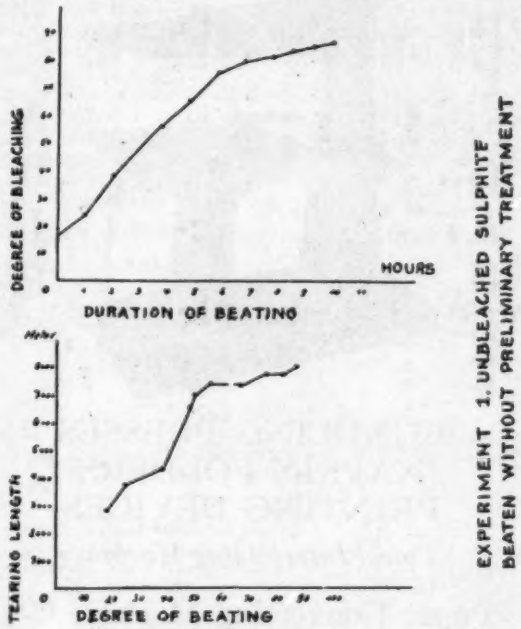
(PATENTS PENDING FOR THESE IMPROVEMENTS)

Slitting Attachments with "M. & W." Removable Bottom and Top Slitters can be supplied for drum winders, any width

FURTHER PARTICULARS UPON REQUEST

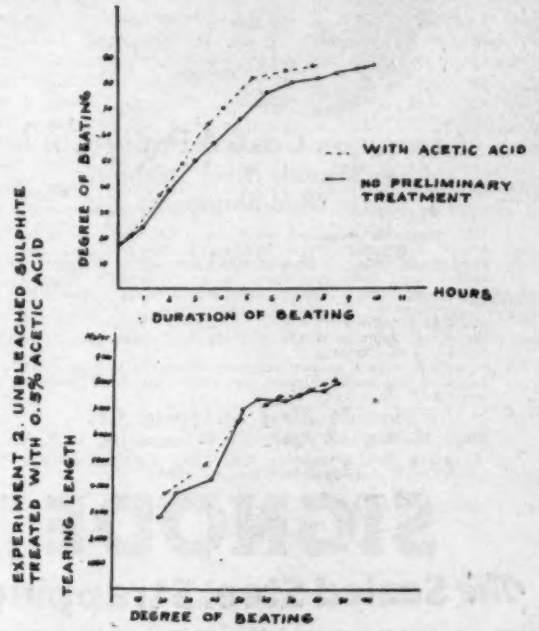
The MOORE & WHITE Co.
PHILADELPHIA, PA.
N. PHILA. STA. PENNA. R.R.
PAPER MILL MACHINERY

dry weight. Eighty-six different degrees of beating were carried through. In the first experiment, unbleached sulphite pulp was beaten without any preliminary treatment. The duration of beating, the tearing length and the percentage elongation were determined in each experiment and in each

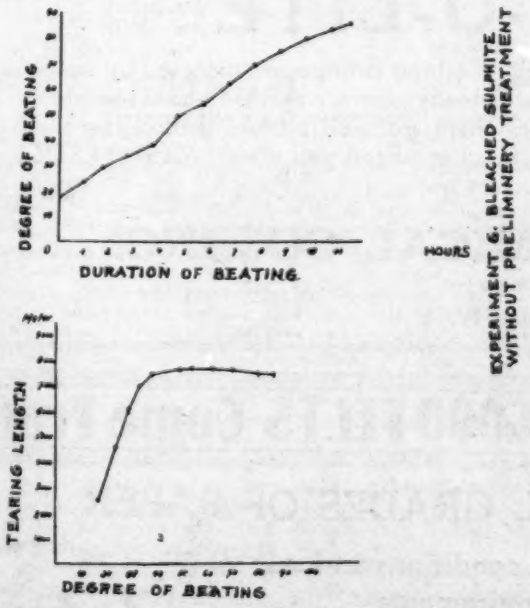


test made in the experiment. Curves were drawn to show the graphical relation between the time of beating and the properties of the beaten pulp.

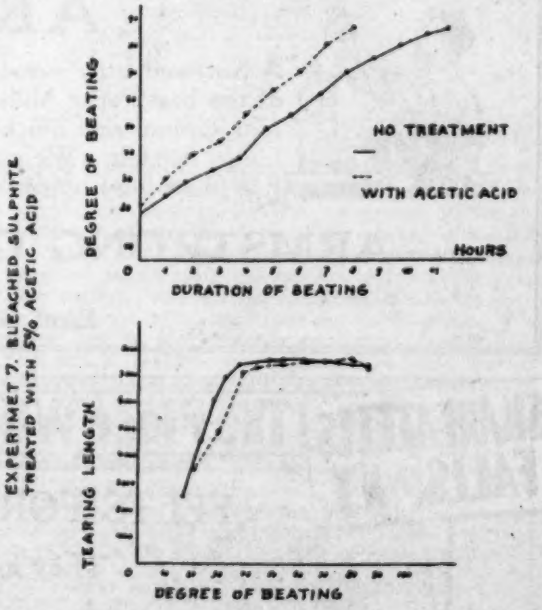
In experiment two, the pulp was preliminarily treated with half a per cent of acetic acid. In the third experiment,



the unbleached sulphite pulp was allowed to swell up in a five per cent solution of sodium hydroxide. After fifteen hours in the solution, the pulp was washed with water which was slightly acidified. In the fourth experiment, the unbleached sulphite pulp was treated with a five per cent solution of sodium hydroxide and then washed with water before being beaten. In the fifth experiment, the unbleached

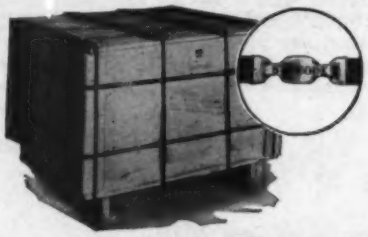


pulp was treated with a one per cent solution of nitric acid. In the sixth experiment, the bleached sulphite pulp was beaten without any preliminary treatment. In the seventh experiment, the bleached sulphite pulp was treated with a five per cent solution of acetic acid. In the eighth experiment, the bleached sulphite cellulose was beaten in a five per cent concentrated solution of sodium nitrite. In the ninth experiment, the bleached sulphite pulp was beaten in a stoneware beater without any preliminary treatment. In the tenth and final experiment, the bleached sulphite pulp was treated



with a one per cent solution of acetic acid and then beaten in a stoneware beater.

The following conclusions were drawn from a comparison of the various results obtained in these experiments. Mineral acids and alkalies lead to the formation of slime, but they affect the properties of the paper which is made from the pulp in so unfavorable a manner that the practical applica-



Champion Coated Paper Co.
Uses Signode Steel Strapping for Skid Shipments

The Signode Strapped skid used by Champion reduces container costs, saves time, packing, and unpacking, saves freight, increases the factor of safety—and does not have to be returned. We will gladly send you complete information on this type of application if you are interested.
Signode Tensional Steel Strapping is also saving time and money in the shipment of paper in boxes, crates, and cartons.
It will pay you to investigate. Signode shippers will be glad to demonstrate—or shall we send catalog No. 15P?

Signode Steel Strapping Co.
2608 N. Western Ave. Chicago, Ill., U. S. A.
Canadian Steel Strapping Co., Ltd., Toronto, Ontario
Offices in Principal Cities

SIGNODE
The Sealed Steel Strapping

(We also manufacture round wire tensional reinforcements, all forms of nailed strapping, pail clasps, clutch nails, tag fasteners, etc. Write for general catalog.)

DEPENDABLE DURABLE

BUNDLING PRESSES
NAPKIN FOLDERS
PRINTING DEVICES
Towel Interfolding Machines

Paper Converting Machine Co.
Green Bay, Wis.

ARM-O-LITE

A New and truly wonderful Felt Washing Compound indorsed by some of the best Paper Mills, who are steady users. ARM-O-LITE washes felts cleaner and quicker, leaves them soft and pliable, prolonging the life of the felt. We guarantee it. Let us tell you about ARM-O-LITE Felt Washing Compound.

ARMSTRONG CHEMICAL CO., INC.
Manufacturers
East Syracuse, N. Y.

SKANEATELES FALLS, N.Y.

The Place Where GOOD FELTS Come From

FELTS FOR ALL GRADES OF PAPER

They meet all conditions and suit all requirements

Have you tried them?

THE WATERBURY FELT CO.

tion of these substances can scarcely be considered. The organic acids, however, such as acetic acid and inorganic salts, such as sodium nitrite and other salts, behave entirely differently. These reagents produce an acceleration in the formation of slime, but only in beating in the beater, without there being any noticeable decrease in the strength of the pulp. The time of beating is shortened by about thirty per cent in the beater which is provided with a beater roll containing knives and by about twenty per cent in the stoneware beater.

A comparison of the beating of pulp as it takes place in these two different types of beaters results in the conclusion that the time of beating, which is required to bring about a degree of beating of 90 degrees in the stoneware beater is about half that in the other type. Der Papierfabrikant, 1928, pages 722-727.

Influence of Pressure on the Strength of Paper

IN ORDER to determine the effect of pressure or pressing on the strength of paper, about one kilogram of air-dry, unbleached sulphite pulp was beaten in a small experimental beater, and pulp of 25, 50 and 75 degrees of beating was prepared. The pulp was made into a paper sheet and the latter was then pressed between felts in a hydraulic press. In order to obtain an idea of the effect of pressure upon the strength of the sheet, the pressure was increased in each case a definite number of atmospheres at a time until the maximum pressure was attained.

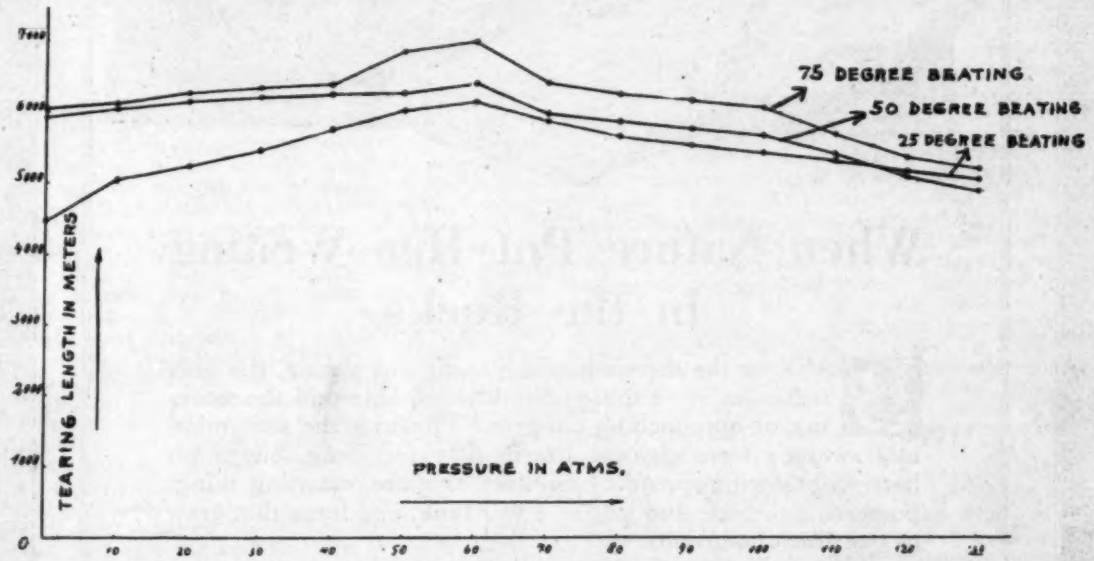
The first sample was pressed by hand pressure only, while the second was pressed under a pressure of ten atmospheres, the third under twenty atmospheres and so forth up to the fourteenth sample, which was pressed under 130 atmospheres. In all cases, the pressure was allowed to act upon the paper over a period of half a minute.

Fourteen samples of each kind of paper made from pulp of 25, 50 and 75 degree beating were finished and dried in an electrically heated drying cylinder, covered with a wet felt. Strips were then cut from these samples and these were placed in a chamber where they were allowed to absorb a definite moisture content, 65 per cent. Then the samples were tested for strength.

The accompanying curves show the tearing length in meters of the various samples under various conditions. Thus in the case of paper made from pulp, 25 degree beating, the tearing length increases rapidly from a minimum of 4423 to a maximum of 6107 meters at a pressure of 60 atmospheres. Then as the pressure increases, the strength decreases.

In the case of paper made from pulp of 50 degree beating, the initial tearing length of the paper is much greater than in the first case. The strength of the paper increases up to a pressure of 60 atmospheres. Then as the pressure is further increased, the strength gradually decreases.

In the third case, beating up to 75 degrees, the paper increased in strength as the pressure applied on it increases up to the 60 atmosphere point. Between the points 60 and 70 atmospheres, the decrease in strength is rather greater than from 70 atmospheres upwards. This phenomenon takes place in all three degrees of beating. It is also found that the sudden decrease in the strength of the paper between the points 60 and 70 atmospheres is sharper as the degree of beating becomes greater. It is also easy to see from these experiments that a higher pressure than 60 atmospheres applied to the paper sheet decreases the strength of the paper. It should also be pointed out that these figures cannot be translated directly into practice, but the general truth of the conclusions remains. Der Papierfabrikant, volume 26, pages 754-7.



Cellulose from Beechwood and Bamboo

IN the preparation of cellulose from highly lignified plants of all kinds, such as beechwood, bamboo, and other hard woods, the raw material, first comminute in known manner, is steeped or softened in hot or cold basic or acid liquors, or boiled in water, then reduced to fiber in any known crushing apparatus, such as an adge runner, compressed preferably to the condition of pulp or ribbon, impregnated with basic liquor, and then, as a pulp concentration exceeding eight per cent, subjected to alternate chlorination and washing with alkali, the desired concentration being obtained after each washing by means of a centrifuge or worm press. The chlorination may be done in tower apparatus provided with conveying devices, and is continued until the liquid has become acid, and the acid liquor may be removed in a centrifuge before the alkali washing takes place. The chlorinating apparatus may be heated and chlorine carriers or catalysts such as stannous chloride may be added. As softening agents may be used hydroxides of the alkalies or alkaline earths, sodium carbonate, various sulphites, various acids, hydrolytically decomposed salts such as bisulphites, zinc chloride, magnesium chloride, and calcium thiocyanate, phenols, and solutions containing phenols. R. Runkel, British Patent No. 296,547.

Changes in Paper Due to Moistening

WHEN a sheet of paper is moistened with water and the excess water is removed by means of a piece of blotting paper and the paper sample is dried at a temperature of 45 degrees C., then measurement of the size of the paper sheet shows that the changes in the direction across the width of the paper are considerably less than in the direction of the travel of the web on the papermaking machine. N. Michailow, Bumaschnaja Promischlennost, vol. 7, pages 450ff.

When Nature Put Her Writing In the Rocks

BACK in the days when the earth was young, the only messages were those of terror and hate and the warning of approaching dangers. Plodding the vast miasmal swamps were gigantic lizards fifty feet long, enormous bats with a wing-spread of ten feet or more, crawling things possessing the size and gait of a war tank, and ferns that grew to tree-like dimensions.

All these have passed away. The gigantic bats have left their forms impressed in aging layers of slate; the dinosaurs are remembered only by their footprints in the Jurassic rocks, a few ten-million-year old eggs in the dry storage of the Gobi desert, and some fossil bones that impress the beholder with astonishment at nature's versatile powers; while the fern "trees" bequeathed us a heritage of coal.

Today men harness the forces of climate and growth that put the gigantic forms of an earlier creation out of existence.

Nature's writing is a product of accident and of ages—man's, of will and paper.

Hammermill Paper Company

Erie, Pennsylvania

New York, April 1, 1929.

THE market for paper is exhibiting good activity. There is room for improvement, of course; it might be at any time said that there is the desire for more business and a broader market, yet according to most reports and indications, demand for paper is developing in fairly large volume and the market is showing as much activity as ever before at this period of the year in normal times. Buyers are filling their needs in a steady manner; there is not the hesitancy about purchasing a bit ahead of current requirements, and all in all—from a volume standpoint—business is about all that could reasonably be expected.

The price position gives signs of improvement. There has been, in fact, a definite strengthening of prices of some classes of paper and board. Advances seem to be the order of the day; at any rate, such changes of consequence as have been recorded recently have been upward in a majority of cases. This is not surprising. Rather the surprising thing is that manufacturers permitted market levels to remain as low as they were for as long as they did. Evidently, paper producers have in some instances come to the conclusion that prices are too low based on prevailing manufacturing costs, and the reaction to the period of low market values and small profits to the manufacturer has taken concrete form in some cases in a marking up of quotations.

Mill prices of kraft wrapping have been advanced, box board quotations are up slightly, some lines of tissue papers are firmer quotably, and writing papers are on a higher price level in some quarters. The one exception to the general upward trend in prices is newsprint, which has been marked down to a lower level than has been seen since prior to the war. This, however, was anticipated, and long since has been entirely discounted in the market. Why print paper prices have been put down as low as they are is something only the manufacturers themselves can explain, though comments from the trade mention competition, over-production and other such factors which are supposed to place the skids under market values.

Production of paper in the United States in January showed a considerable increase over the preceding month's output, according to the monthly statistical summary of the American Paper and Pulp Association. The January production reached a total of 600,454 net tons, against 523,018 tons in December last, and 575,912 tons in November last. The January output also compared with 533,761 tons produced in the same month of 1928, an increase of 12 per cent. The jump in production in January was largely a result of the gain in activity in the paperboard industry, production of board recording an increase amounting to 22 per cent over the corresponding month a year ago, according to identical mill reports. However, all grades of paper, with the exception of hanging and felts and building, also registered gains in January over last year. Book paper output was 10 per cent greater than in January, 1928; bag paper was 18 per cent larger, tissue paper 9 per cent, writing 8 per cent, wrapping 6 per cent, and newsprint 4 per cent. Shipments of paper from mills during January aggregated 596,800 tons, against 535,336 tons in the preceding month, and stocks declined from 285,449 tons of all grades at the end of December last to 280,452 tons at the end of January.

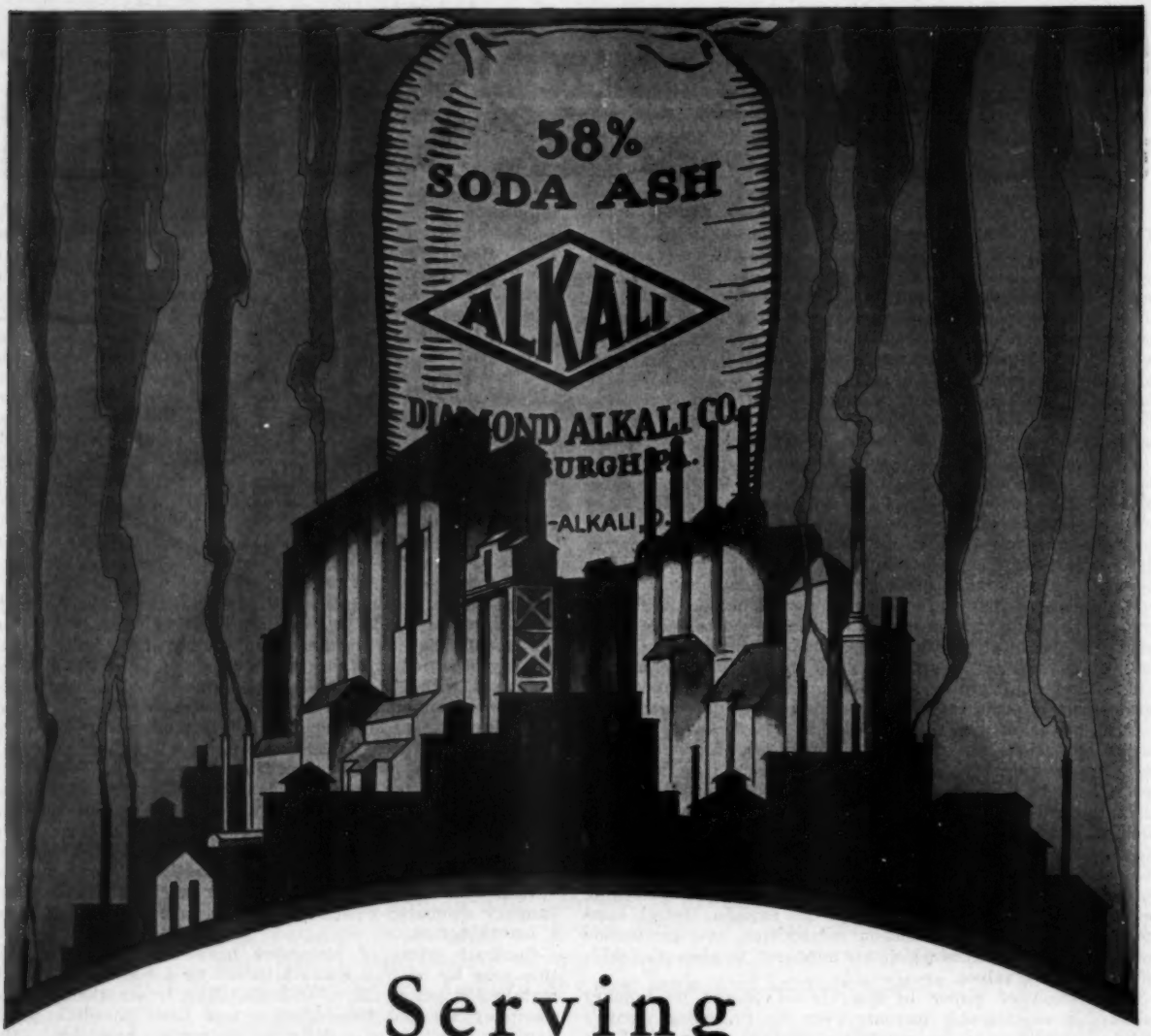
The February production of newsprint declined as compared with January, but this was to be expected because February is a short working month. The News Print Service Bureau puts the production of newsprint in the United States at 103,644 net tons in February, and shipments from mills at 108,375 tons, contrasted with 123,822 tons made and 120,263 tons shipped in January, while Canadian mills produced a total of 187,200 tons and shipped out 186,395 tons in February, against 212,191 tons made and 209,020 tons shipped in the preceding month. During February, 18,783 tons of newsprint were manufactured in Newfoundland and 1,367 tons in Mexico, so that the total North American output for the month amounted to 310,994 tons, compared with 358,543 tons in January. The Canadian mills produced 23,972 tons more newsprint in the first two months of 1929 than in the same time last year, which was an increase of 6 per cent, while the United States output was 4,361 tons or 2 per cent less than during the first two months of 1928. Production in Newfoundland was 4,447 tons or 13 per cent larger, and in Mexico 440 tons more, making a total increase for the North American Continent of 24,498 tons or 4 per cent over the similar period in 1928. During February the Canadian mills operated at 77.9 per cent of their rated capacity, and the U. S. mills at 77 per cent, and the Newfoundland mills at 99.3 per cent. Stocks of newsprint at Canadian mills at the end of February totaled 25,536 tons, and at U. S. mills 35,642 tons, making a combined total of 61,178 tons, equivalent to 3.9 days' average production.

Paper board production hit the high spots during January. In fact, more board was manufactured in this country in that month than in any month all during 1928. Mills of the country produced a total of 247,962 tons of board in January, compared with 205,046 tons in December last, according to the monthly summary of the board industry compiled by the U. S. Department of Commerce, mills producing at 86.1 per cent of their rated capacity during January, against 71.2 per cent in the preceding month. New orders received by manufacturers for board in January called for a total of 237,095 tons, against 197,148 tons in December, and unfilled orders held at the end of January were for 83,661 tons, contrasted with 94,174 tons a month previously. Shipments of board from mills in January aggregated 247,085 tons, against 197,029 tons in December, and mill stocks at the end of January amounted to 56,994 tons, compared with 55,624 tons a month before.

Contract prices of newsprint have been announced for this year by leading manufacturers on a basis of approximately $55 per ton f. o. b. mills. The International Paper Company has put into effect a new price schedule which names quotations on a delivered consuming point basis, the quotations of course varying to some extent in accordance with the freight to the centers to which shipments are to be made. This company's price per ton to southeastern New York State, including New York City is $62 delivered, which compares with the previous rate of $66 per ton. Meanwhile the market for newsprint is fairly active, publishers are absorbing supplies freely, and it is evident that consumption has been on a high level in recent weeks.

A price advance of $10 per ton has been made in southern kraft wrapping, from $75 to $85 a ton, and the effect of this rise has been to buoy up the entire wrapping paper price structure and make for firmer quotations in other quarters of the market. Demand for kraft has been active, and it is reported that most mills are well supplied with orders which should keep them well engaged for some while. Book paper is moving into consuming channels in consistent fashion and at maintained prices, and tissue is firm and tending upward in a moderately active market. Writing papers are in good call, and quotably firm. Prices of some lines of fine papers are a little up from the levels prevailing until recently. Eastern mills have raised quotations on box board $2.50 a ton to where plain chip is quoted at $32.50 per ton delivered in New York City, and filled news board at $32.50 to $35.

The wholesale price index number for February for the paper and pulp industry was 87.8, compared with the same for January, and 90.9 for February last year, taking 1926 at 100, according to the U. S. Department of Commerce.



Serving Most Essential Industries

THIS Company has been serving the most essential industries with High Grade Alkalies of proved dependability for years. In the large modern Diamond Plants at Painesville, Ohio, numerous industrial alkalies are manufactured by the most modern and scientific methods—and in sufficient volume to meet carload lots in any desired quantity. Less than carload lots are quickly obtainable from local distributors in all principal cities.

Diamond Alkali Company

PITTSBURGH, PENNA.

Papermaking Rags

The outstanding development in papermaking rags and the feature of the market at present is the increased demand for roofing rags. Consumers of such grades have been operating in the market on a scale that has served to drive prices up fairly sharply, and in spite of the advancement in values, there are signs that buyers are experiencing some difficulty locating all the supply of these rags desired. In its other divisions also, the papermaking rag market is exhibiting fair activity. There is a good call for some grades of new cuttings, and most of the old cottons are enjoying at least a normal demand, if not a little better than normal. Paper mills apparently permitted their stocks of rags to get down to a low level, and therefore have been more generally in evidence as buyers recently. And with demand of broader scope arising at this time of the year when stocks in dealers' hands are low owing to light winter collections, prices in frequent cases have been affected and have scored gains.

Market values of domestic roofing stock have moved upward to where sales to felt mills have been recorded at 1.90 cents a pound for No. 1 packing or cloth strippings f. o. b. shipping points, and at 1.50 cents for No. 2 domestic packing or satinets. Even at these prices, consumers are now having some trouble locating all the supply wanted, and dealers, possessed of bullish price ideas, are holding strong for the full figures quoted and appear to be obtaining the rates asked. Foreign dark colored cottons have been sold at 1.65 and 1.70 cents a pound ex dock New York for forward shipment from abroad, and importers in common are demanding the higher price while asserting that purchases abroad are difficult to engineer at low enough costs to enable them to sell to mills in this country at this price basis.

New cuttings are quoted quite firmly, especially a few grades which have been moving freely into consuming channels and which, from all indications, are now in small available supply. New blue overall cuttings have brought 8 cents a pound at dealers' shipping points, new light silesias 8.50 cents, fancy shirt cuttings 6.50 cents, and unbleached cuttings 11 cents. A better demand has been witnessed for new No. 1 white shirt cuttings, for which sellers generally ask 11 cents a pound, though it is said that purchases can be effected under this price level. New O. D. khaki cuttings are firm at 6 cents a pound at shipping points, as are washables at 4.75 to 5 cents, light flannelettes at 8.75 cents, and black silesias at 4.75 to 5 cents.

With new blue cuttings scarce and high-priced, papermakers are reported manifesting more interest in old blue cottons, and prices of thirds and blues display a strengthening tendency. While actual market rates have not changed, it is noted that buyers are finding it necessary to grant close to the upper edge of quotational ranges, and repacked old thirds and blues are bringing 2.50 cents a pound at dealers' shipping points, twos and blues 2.75 cents and perhaps higher, and miscellaneous thirds and blues around 1.80 cents. No. 1 repacked old white rags are steady quotably at 5.50 cents a pound upward at shipping points, with some packings held at 6 cents and more, depending on the quality of the rags concerned, while No. 2 repacked whites are fetching 2.50 to 3 cents per pound at dealers' points.

Foreign rags are firm, due to both a better call from mills here and to a relatively strong situation at primary sources abroad. Imports are below normal in point of volume, and dealers assert that it is hard to buy in Europe at the prices U. S. paper mills are willing to pay and realize a profit. This price situation doubtless accounts for the smaller importations recently. Foreign roofing grades, linens and new cuttings are inquired for freely by paper manufacturers.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	10.50–11.00
White shirt cuttings, No. 2	6.50– 7.50
Fancy shirt cuttings	6.25– 6.50
Washables, No. 1	4.75– 5.00
Unbleached muslins	11.00–11.25
White lawns	9.00– 9.50
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Light flannelettes	8.50– 8.75
Canton flannels, bleached	9.75–10.00
Canton flannels, unbleached	8.75– 9.00
Shoe cuttings, bleached	7.50– 8.00
Shoe cuttings, unbleached	6.00– 6.50
Light silesias	8.25– 8.50
O. D. khaki cuttings	5.75– 6.00
Mixed khaki cuttings	4.75– 5.00
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.25– 3.50
Linens, No. 1, white foreign	14.00–15.00
Light prints foreign	3.00– 3.25
Old Stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.50– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.85– 2.00
Lace curtains	5.50– 5.75
Thirds and blues, rough	1.75– 1.90
Thirds and blues, repacked	2.25– 2.50
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.75– 5.00
White cotton batting	4.50– 4.75
Roofing, No. 1 (cloth strippings)	1.85– 1.95
Roofing, No. 2	1.50– 1.55
Linsey garments, foreign	1.90– 1.95
Dark colored cottons, foreign	1.65– 1.70
Blue linens, foreign	3.75– 4.00
Gray linens, foreign	4.00– 4.50
White linens, foreign	7.50– 8.00
Light prints, extra foreign	1.90– 2.10

Rope and Bagging

Additional advancement in prices of old rope have been recorded, and a distinctly strong market prevails for this papermaking raw material. There are signs that paper mills are not procuring all of the old rope wanted, and as usually is the case under such circumstances, prices are rising fairly rapidly. Dealers say that normal supplies are not reaching the market, and that recent importations have fallen off considerably, and it can be said that something of a scramble among consumers for old rope has been witnessed. Domestic No. 1 old manila rope has sold to mills at 4.75 to 5 cents a pound f. o. b. shipping points, and 4.25 cents and higher has been paid for foreign old manila ex dock New York or other American Atlantic ports. However, other grades of old rope and strings have not shared in the market activity, and show little change in price. Mixed strings are selling at 90 cents per hundred pounds upward at shipping points, and sisal strings at 1.50 to 1.75 cents a pound.

More demand for roofing bagging has sent prices of this material a little higher, but other grades are quiet and quotably unaltered. Roofing grade is selling at 1.25 to 1.30 cents per pound at shipping points, while No. 1 scrap bagging is relatively low in price at 1.60 to 1.65 cents. Scrap wool tares are in routine demand.

"Superior" Rosin Size

In Tank Cars or Drums

SUPERIOR CHEMICAL
TRADE MARK

QUALITY STILL PAYS DIVIDENDS

The purchase of a really good cigar by one who enjoys his smokes is money well spent. So it is with everything else, whether it be a pair of shoes, a ton of coal or a tank car of "SUPERIOR" ROSIN SIZE.

The makers of SUPERIOR ROSIN SIZE are ever on guard to investigate and improve the quality and distribution of this product, in order that the paper mills in the United States, Canada, Great Britain and Continental Europe may be afforded the highest quality Size delivered to them as economically and uniformly as possible.

SUPERIOR ROSIN SIZE is truly the most used sizing agent today (here and abroad). It is constantly winning new friends and keeping them.

Paper Makers Chemical Corporation

Easton, Pa.	Kalamazoo, Mich.	Holyoke, Mass.	Albany, N. Y.
Atlanta, Ga.	Marrero, La.	Stoneham, Mass.	Carthage, N. Y.
No. Milwaukee, Wis.		Portland, Me.	Lockport, N. Y.
Savannah, Ga.	Jacksonville, Fla.	Boston, Mass.	Pensacola, Fla.

AND ASSOCIATES

C. K. Williams & Co., Easton, Pa., Emeryville, Cal., Malaga, Spain
Geo. S. Mepham & Company, East St. Louis, Ill.
Paper Makers Chemicals, Ltd., Erith, Kent, Eng.
Paper Makers Importing Co., Easton, Pa., St. Austell, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ont.

"There is a Superior Plant near you"

SUPERIOR PRODUCTS

Rosin Size
Wax and Special Waterproofings
Satin White
English and Domestic Clays
Casein
Casein Solvents
Foam Killers
Felt Soaps
Soap Powder
Vegetable Tallow
Anti-Froth Oil
Softeners
Colors Dry and Pulp

Cut your cost of Production
Improve your Quality
Increase your Profits
by
The use of Efficient Equipment
for

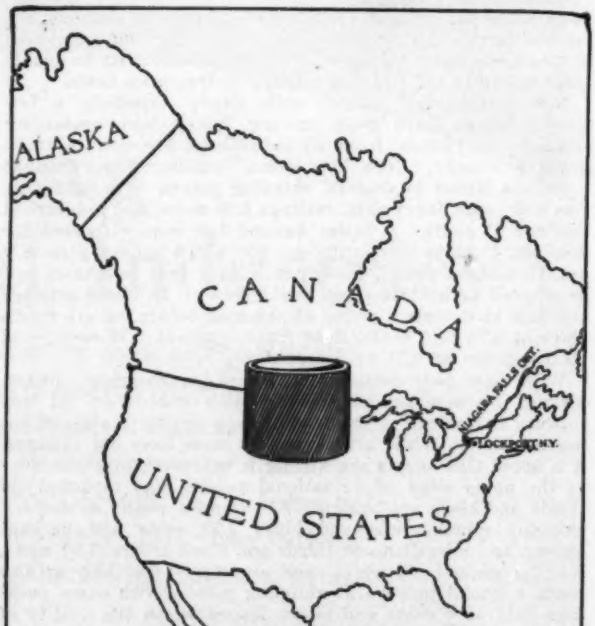
1. Woodpreparing
2. Acidmaking
3. Cooking
4. Screening
5. Dewatering
6. Drying

We cover the whole field

G. D. Jenssen Co.

200 Fifth Ave., New York City

Sole Representatives
For: Paper Machinery, Ltd.
Montreal, Quebec



F.W. ROBERTS MFG. CO. INC.
LOCKPORT N.Y. U.S.A.
F.W. ROBERTS MFG. CO.
OF CANADA LTD.
NIAGARA FALLS ONT.
MANUFACTURERS OF
PAPER & PULP MILL SPECIALTIES

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.60–1.70
Gunny, No. 1 foreign	1.50–1.60
Scrap bagging, No. 1	1.60–1.70
Roofing bagging	1.25–1.30
Wool tares, heavy	1.65–1.75
Wool tares, light	1.55–1.65
Manila rope, No. 1 foreign	4.25–4.50
Manila rope, No. 1 domestic	4.75–5.00
Sisal strings	1.50–1.75
Mixed strings	.90–1.10

Old Paper

The market for old paper has quieted to same degree, more particularly for the low-quality or board mill grades. Apparently, board manufacturers have covered their bulk requirements for a time and have let down in their purchasing, and consequently prices have eased off slightly, but the higher qualities are steady in demand and value. Old folded newspapers are selling in the East at 65 cents per hundred pounds f. o. b. shipping points, and No. 1 mixed paper at 50 to 55 cents, whereas above these prices are being paid in the Middle West. A firm class of stock is old books and magazines which are fetching 1.50 cents a pound at dealers' points for No. 1 heavy books, and doubtless above this price is figuring in some transactions. Shavings are quoted on last reported levels although at a rather broad range, this being due to a better demand for the high-grade packings for which consumers are paying a premium. Soft white shavings run in value all the way from a low of about 2.25 cents a pound up to 2.70 cents for extra packing, while No. 1 hard white shavings are quoted at 2.65 to 3.10 cents per pound at dealers' points. Old kraft is quiet at a quotable level of around 1.85 cents a pound for No. 1 packing, and ledger stock is bringing 1.50 to 1.75 cents, according to quality.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.65–3.10
Hard white shavings, No. 2	2.50–2.75
Soft white shavings	2.25–2.70
Colored shavings	1.00–1.25
Heavy book, No. 1	1.45–1.55
Crumpled book, No. 1	1.15–1.25
Ledger stock	1.50–1.75
Kraft, No. 1	1.80–1.90
New kraft cuttings	2.40–2.60
Manilas, No. 1	.80–1.00
Folded news	.65– .80
Sulphite mill wrappings	.75– .85
Old corrugated boxes	.65– .75
New corrugated box cuttings	.80– .90
Mixed paper, No. 1	.50– .65
Common paper	.40– .50

Pulpwood

Demand for pulpwood is reported fair, and supplies are moving to consuming centers in moderately good tonnage. No change of importance is noted in market levels, prices ruling about stationary.

Judging from latest available figures, Canada is using more of her pulpwood and is exporting less. Exports during the first two months of this year amounted to 192,549 cords of a value of $1,732,992, all of which came to the United States, showing a considerable drop from the exportations of 286,838 cords, valued at $2,590,613, in the similar time of last year.

Mechanical Pulp

Ground wood exhibits a steady price undertone, and the market is developing fairly good activity although it is evident that consumers are buying against known requirements principally. The feature in the market is the firmness of prices at producing sources and the insistence of grinders on the rates asked. Apparently, manufacturers are determined to keep market values on the slightly higher levels which they have succeeded in establishing during the

GDC

THE G D C POLICY

QUALITY FIRST

For the Coloring of Paper Specialties

We offer a full line of Dyes and also our services for application of same.

We solicit your inquiries.

NEKAL B EXTRA

An ideal wetting-out and softening agent for new and old press felts. An effective cleaning agent in place of sulphuric acid. Strictly neutral.

230 Fifth Avenue, New York, N. Y.

Boston Providence Philadelphia Charlotte Chicago San Francisco

GENERAL DYESTUFF CORPORATION

Sulphur

A FIRST REQUISITE

IN

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

TEXAS GULF SULPHUR CO.

41 E. 42nd Street New York City

Mine Gulf, Matagorda County, Texas

The TRADE MARK of STANDARD PURITY

IS YOUR ASSURANCE OF HIGH QUALITY

It eliminates the chances of costly errors which might result from variation in the purity of the chemicals you use. It helps you to standardize your processes, and to maintain the uniformity you seek in the products you make. It is a mark of "plus value."

SULPHURIC ACID

Aluminum Sulphate
Glauber's Salt
Disodium Phosphate
Trisodium Phosphate
Muriatic Acid
Acetic Acid
Sodium Sulphide
(Chip Patented)
Anhydrous Bisulphite Soda
And other Heavy Chemicals of Standard Quality
Insecticides and Fungicides

Also

Baker & Adamson Quality C. P. Acids and Reagents which may be purchased from the General Chemical Company or local dealers.

GENERAL CHEMICAL COMPANY

40 RECTOR ST., NEW YORK

CABLE ADDRESS, LYCURGUS, N.Y.

BUFFALO
CHICAGO
CLEVELAND
PITTSBURGH
PROVIDENCE
DENVER
ST. LOUIS
THE NICHOLS CHEMICAL CO., LTD., MONTREAL
LOS ANGELES
PHILADELPHIA
SAN FRANCISCO

263

winter season, and cases frequently come to light where this or that producer politely refuses to sell below what he considers are prevailing levels of value. Domestic ground wood is offered sparsely because few grinders are producing other than pulp to satisfy their own requirements or to cover contract commitments, and is quoted at around $27 a ton f. o. b. pulp mills, dry weight. Grinders in Canada are demanding $24 to $26 a ton at grinding plants, and it is stated that some are declining to accept orders under the higher figure. Imported ground wood of Scandinavian origin is priced at $32 to $33 per short ton ex dock New York or other American Atlantic ports.

Mills in the United States produced a total of 97,736 net tons of ground wood in January, against 90,190 tons in the preceding month; used 90,751 tons, compared with 83,371 tons in December; shipped out 2,894 tons in January, contrasted with 3,015 tons in December, and had stocks on hand aggregating 85,734 tons at the end of January, against 82,342 tons a month earlier.

Chemical Pulp

Reports tell of a fairly good demand for chemical pulp of domestic manufacture, and prices are holding their own. Most of the business transpiring is on contracts, but producers as a general thing are disposing of all the supply they have available for shipment, and there is little indication of selling pressure. Open-market demand is quiet, but this is believed to be a temporary condition that will change, since it is felt that a considerable accumulation of demand is being stored up which sooner or later will have to assert itself. Bleached sulphites are steady quotably at 3.75 to 4 cents per pound at pulp mills for the most popular grades, with substantially higher asked for extra qualities. Unbleached sulphite is selling at 2.75 to 3 cents for book grade and 2.50 to 2.75 cents for news quality, while bleached soda pulp is quoted around 3.15 cents f. o. b. pulp mills. Kraft pulp of No. 1 domestic quality is on a price range of 2.75 to 3 cents per pound at shipping points.

Chemical pulp output in the United States increased in January over the preceding month, totaling 133,295 net tons of all grades of chemical in January, as compared with 113,522 tons in December, according to the American Paper and Pulp Association. Mill stocks at the end of January aggregated 23,715 tons, contrasted with 24,158 tons at the end of the preceding month.

Quotations f. o. b. pulp mills are as follows:

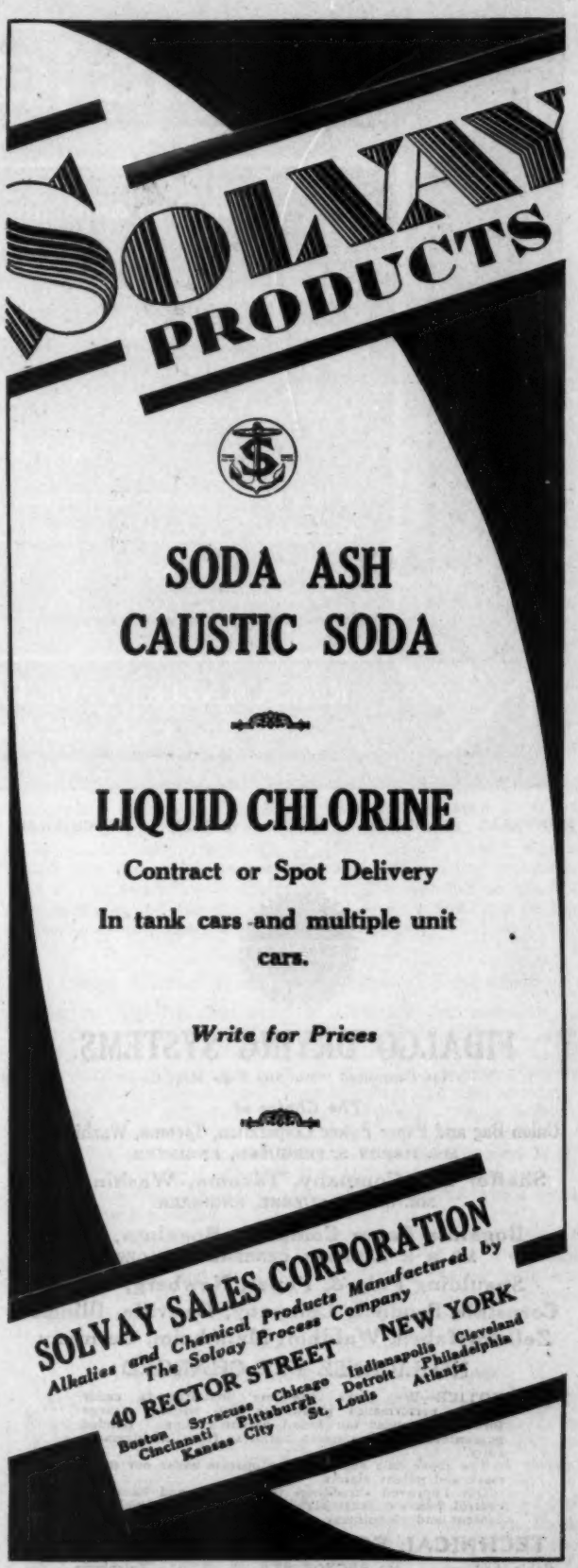
Bleached sulphite	3.75–4.75
Easy bleaching sulphite	2.75–3.00
Unbleached sulphite, No. 1 strong (new grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.40–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.75–3.00
Screenings, refined	1.40–1.60

Chemicals

Prices of casein have strengthened slightly to where the domestic product is quoted 16 to 16.50 cents a pound, with importers asking about the same figures for foreign casein, in bags, duty paid. Bleaching powder is quotably steady at 2 to 2.35 cents per pound in large drums f. o. b. works. An excellent demand is reported for caustic soda, and quotations are firm on a basis of 2.90 cents a pound for the solid product at works. Soda ash prices are maintained at 1.32½ cents per pound for the 50 per cent light product, packed in bags, f. o. b. works.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powder	3.50 – 3.75
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	16.00 –16.50
Caustic soda, spot delivery	2.90 – 3.00
China clay, domestic washed	8.00 –10.00
China clay, foreign	15.00 –20.00
Rosin, Grade E	8.70 –.....
Satin white	2.00 – 2.25



Uncle Jake Says-

"No man can skate fast enough on thin ice to make it safe."

No manufacturer can talk long enough or fast enough to make a poor product a good sale for himself or a good buy for the purchaser.

When we dispose of

KVP PAPERS

it is a good sale for us because it means repeat orders, and by the same token it is a good buy for the purchaser because they serve him well.

KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

MONTREAL LONDON PARIS BERLIN STOCKHOLM

The Label on the Bale

FIDALGO DRYING SYSTEMS

FIDALGO DRYING SYSTEMS

(Not Connected With Any Pulp Mfg. Co.)

The Choice of

Union Bag and Paper Power Corporation, Tacoma, Washington
MR. HARDY S. FERGUSON, ENGINEER

Shaffer Box Company, Tacoma, Washington
MR. L. A. DeGUERRE, ENGINEER

Bogalusa Paper Company, Bogalusa, La.
MR. R. H. LAFTMAN, GENERAL MANAGER

Spaulding Pulp & Paper, Newberg, Ore.
Cornstalk Products Company, Danville, Illinois
Zellstofffabrik Waldhof, Mannheim, Germany

NO LICENSE FEE CHARGED

NOTICE—We make complete installations under specific performance guarantees and without charge for license under our broad patent claims. Bonded guarantees hold Customers harmless from infringement suits.

The above only authorized to operate under our trade mark and patent claims.

Our improved shredding, temperature and humidity control, best assurance high pulp test, uniform moisture content and cleanliness.

TECHNICAL ECONOMIST CORPORATION

Cable Address HERENCO — 40 RECTOR ST. N. Y. CITY — Telephone WHITEHALL 8243

STANDARD BLEACHING POWDER

Liquid Chlorine

Single Unit Tank Cars — Multi-Unit Tank Cars
150-Lb. Cylinders — (1-Ton Containers

Commercial Sulphate of Alumina
Natrona Porous Alum

Pennsylvania Salt Mfg. Company
Philadelphia, Pa.

RUSS GELATIN CO.

WORKS—WESTFIELD, MASS.

MANUFACTURERS OF

GELATIN and GLUE
ANIMAL SIZING GLUE STOCK

LARGEST SPECIALISTS IN AMERICA ON
FINE WRITING PAPER SIZING

E. F. RUSS COMPANY 257 Atlantic Avenue BOSTON, U. S. A.

New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	9–30
Colored sulphite	8–30
Colored rag	15–40
Bonds—	
White rag	16–40
White sulphite	7–30
Colored sulphite	7–30
Colored rag	15–40
Books—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–13.00
Lithograph, M. F.	7.50–14.00
Newsprint—	
Rolls, contract	2.75–
Rolls, transient	3.00– 3.25
Sheets	3.25– 3.50
Side runs	2.75– 3.00
Cover stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.70– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	5.50– 6.00
No. 2 kraft	4.50– 5.00
Southern kraft	4.75– 5.00
Boards—	New York and Chicago
Solid news	35.00–40.00
Straw	52.50–57.50
Plain chip	32.50–35.00
White coated chip	45.00–50.00
Manila coated chip	40.00–45.00
Binder's board	65.00–70.00

Chemicals

(*Continued from page* 159)

Soda ash, 50 per cent light (bags)	1.32½–.....
Starch, papermakers', in bags	3.82 –.....
Talc (ton)	16.00 –18.00

Paper Converting Machine to Increase Output

Paper Converting Machine Co., Inc., Green Bay, Wis., announces plans for a new fireproof unit 80 x 100 steel and concrete construction, and additional machinery to more than double its present capacity. This makes the third addition to the company's plant since its organization in 1920. It is expected the new building will be completed about July 1st.

This company manufactures a complete line of converting machines, such as interfolders, crepe machines, high speed napkin folders, bundling presses, bag printing presses, etc.

Kalbfleisch Corporation 100 Years Old

In celebration of the one hundredth anniversary of the Kalbfleisch Corporation, of 200 Fifth avenue, New York, with plants in Erie, Pa., Kalamazoo, Mich., Chattanooga, Tenn., Elizabeth, N. J., Waterbury, Conn., and De Quincy, La., some ninety members of the organization, including the company's officers, directors and employees and a few specially invited guests, met at the Fifth Avenue Restaurant, New York, on the evening of March 20 to enjoy a dinner and pay honor and tribute to the house of Kalbfleisch. Hays H. Clemens, director, and a conspicuous figure in the company's affairs, was toastmaster and paid a glowing tribute to Franklin H. Kalbfleisch who was president of the corporation from 1873 until 1920 when he was succeeded by Harry L. Derby, who is now president of the corporation and chairman of the board. An inspiring message from Miss Augusta H. Kalbfleisch, expressing her pride in the company's record of accomplishment was read by Mr. Clemens. Speeches were made by Albert V. Savage, vice president and treasurer, and one of the company's oldest employees, as well as by James W. Prendergast, general counsel, and by Harry L. Derby, who was presented during the course of the dinner, with an inscribed silver platter in behalf of R. H. Asbury, plant manager at Erie, Pa., and the plant employees.

The house of Kalbfleisch was founded by Martin Kalbfleisch in March, 1829, and was carried on by his son, Franklin H. Kalbfleisch, after his father died in 1873. As above stated, Mr. Derby is now president of the Kalbfleisch Corporation and chairman of its board of directors.

The dinner was enlivened by various entertainments including a humorous address by "Senator" Edward Ford, of Michigan, and there was choice singing, Miss Lydia Van Gilder, contralto, formerly of the Chicago Grand Opera Company, rendering several operatic and popular numbers. E. A. Schroeder was chairman of the Committee of Arrangements and was the recipient of many encomiums on the success of the anniversary celebration.

Plans Under Way for Chemical Exposition

At the Twelfth Exposition of Chemical Industries to be held the week of May 6, at the Grand Central Palace, New York, the most scientific methods of applying research to industry under the supervision of competent representatives of the manufacturers of all types of equipment used in chemical and allied industries will be exhibited. There will be over 400 exhibits. An added exhibit to the number of United States Government displays will be the Chemical Warfare Service, details of which will appear at a later date, as will the general program of the various societies which meet during the exposition.

Wednesday, May 8, has been designated as the date for the meeting of the Technical Association of the Pulp and Paper Industry, and an elaborate program dealing with engineering and scientific data by exhibitors of equipment used in the pulp and paper industries will be carried out.

Ross and Waldron in New Offices

After April 22nd, the executive offices of the J. O. Ross Engineering Corp., and the New York office of the John Waldron Corp., now located at 30 East 42nd street will be moved to the new Chanin Building, 122 East 42nd street, New York City.

Both Ross and Waldron maintained branch offices at 208 West Washington street, Chicago and 519 American Bank building, Portland, Ore. The main office and works of the John Waldron Corp. is located at New Brunswick, N. J.

The Pulp and Paper Trading Co.

21 East 40th Street New York City

Dealers in
Domestic Chemical and Mechanical Pulps and Paper

AGENTS FOR
J. & J. ROGERS COMPANY, Ausable Forks, N. Y.
E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

J. ANDERSEN & CO.

21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

The B.C. QUALITY PULPS

HAFSLUND NORWAY — "HAFSLUND BEAR" Bleached Sulphite

F:HAGA — "FORSHAGA" Bleached Sulphite

KRAFT HURUM NORWAY SPECIAL — "HURUM SPECIAL" Extra Strong Kraft

KOOS BAC — "BAMBLE" Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
Incorporated
200 FIFTH AVENUE NEW YORK, N. Y.

PULP

PERKINS-GOODWIN CO.
Established 1846
551 FIFTH AVENUE, NEW YORK

PAPER

EXPORTS

Exports of paper from the United States showed a fairly large increase in point of value during January, 1929, as compared with the preceding month and also contrasted with shipments in the same month last year, according to official statistics issued by the U. S. Department of Commerce. During January, a total of $3,522,573 worth of paper and board of all kinds was exported from this country, against exports of a declared value of $2,697,188 in December last, and $2,423,310 in January, 1928.

Exports of newsprint scored a sharp gain in January, amounting to 3,405,360 pounds of a value of $122,745, as compared with the shipments in the preceding month totaling 1,326,424 pounds of a value of $52,374, the principal shipments in January going to the Philippine Islands, amounting to 1,402,048 pounds of a value of $51,622. Exports of book paper, not coated, in January reached a total of $4,849,374 pounds, valued at $318,942, contrasted with 2,715,024 pounds of a value of $188,727 in December, while exports of surface-coated paper were 1,804,345 pounds of a value of $170,475 in January, against 1,364,776 pounds of a value of $122,245 in the preceding month. Wrapping paper was exported from the United States in January to the value of $295,375, showing a gain over the shipments of a value of $237,779 in December. Fine or writing paper shipments in January reached a value of $326,358, compared with $255,383 in the preceding month, and tissue paper exports climbed from a value of $82,833 in December to $101,777 in January.

Exports of box board were valued at $146,623 in January, recording an appreciable increase over the shipments of a value of $64,761 in the preceding month, while other paper board and strawboard exports in January were valued at $158,817, against $144,879 in December.

IMPORTS

Wood Pulp

Something of a waiting market continues to exist for imported wood pulp. Consumers in the United States in some cases are engaging in buying on a fair scale, but from a general standpoint, paper and board manufacturers are holding aloof as purchasers, presumably being in no pressing need of supplies and perhaps expecting that they will be able to buy later on at more attractive prices. However, quoted rates are well maintained, and importers and agents are putting a good deal of stress on the firmness of values at primary sources abroad, where shippers are said to be in a strong technical position and to be insistent on the prices asked. The feeling in the trade is that a large demand is being accumulated which sooner or later will have to assert itself, and those on the selling side appear to be pursuing a waiting policy also in the confident belief that buying necessarily iwll have to increase in due time.

Statistics obtained through consular channels show that pulp producers in Sweden are in a favorable statistical position. It is estimated that the output of wood pulp in Sweden this year will reach 180,000 metric tons of bleached sulphite, 995,000 tons of unbleached sulphite, and 640,000 tons of sulphate or kraft pulp. Consumption by paper mills in that country during the year is put at 32,000 tons of bleached sulphite, 190,000 tons of unbleached sulphite, and 100 tons of sulphate, thereby leaving available for export an approximate total of 148,000 tons of bleached and 805,000 tons of unbleached sulphite, and 540,000 tons of sulphate pulp. It is estimated that at the end of 1928, sales of Swedish pulp for shipment during 1929 totaled 92,000 tons of bleached sulphite, 536,000 tons of unbleached sulphite, and 274,000 tons of kraft pulp, a total of 902,000 tons, which showed a big increase over the estimated sales of 539,000 tons total at the end of 1927 for 1928 shipment. The sales for this year's shipment at the end of 1928 were equivalent to about 60 per cent of the current year's estimated production of sulphite, and about 50 per cent of the sulphate output for this year. Stocks of pulp on hand at Swedish mills at the end of last year were put at 60,000 tons less of sulphite pulp and 8,000 tons less of sulphate pulp than at the end of the preceding year.

Imports of chemical wood pulp into the United States in January were on a large scale, totaling 135,036 long tons of all grades of chemical, of a declared value of $7,843,546, although somewhat below the record-breaking tonnage of 163,454 of a value of $9,239,597 imported in the preceding month, according to official figures compiled by the U. S. Department of Commerce. January imports also compared with a total of 140,394 long tons, valued at $8,076,033, imported in January last year, which prior to the exceptionally big imports in December, 1928, had stood as the largest importations of chemical pulp into this country in any single month. Ground wood imports in January amounted to 23,064 long tons, valued at $584,859, against 18,936 tons of a declared value of $446,665 imported in the same month of 1928.

Imported bleached sulphite is quoted at 3.80 to 4 cents per pound ex dock American Atlantic ports for the most popular grades, with 4.25 cents and higher asked for extra qualities. Strong unbleached sulphite is around 2.60 cents a pound ex dock New York, easy bleaching sulphite of prime grade about 2.80 cents, and ordinary unbleached Mitscherlich sulphite 2.65 cents. Prime Swedish kraft is quoted at 2.50 to 2.60 cents ex dock, and dry ground wood is on a quotable level of $32 to $33 per long ton on the dock.

Current market quotations ex dock New York, and receipts at the port of New York during March, 1929, follow:

Bleached sulphite, No. 1	3.75– 4.25
Unbleached sulphite, strong No. 1	2.50– 2.75
Unbleached sulphite, No. 2	2.35– 2.55
Easy bleaching sulphite	2.75– 3.00
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.60– 2.75
Kraft, standard Swedish	2.50– 2.60
Ground wood, per ton (dry)	32.00–33.00

Johaneson, Wales & Sparre, 299 bls. from Gothenburg; Bulkley, Dunton & Co., 11,745 bls. from Gothenburg; E. M. Sergeant Co., 1,516 bls. from Oslo and 299 Gothenburg; Atterbury Bros., 2,250 bls. from Oslo; Borregaard Co., 150 bls. from Gothenburg and 110 Sarpsborg; J. Andersen & Co., 1,950 bls. from Sarpsborg, 2,160 Oslo and 500 Gothenburg; M. Gottesman & Co., 3,600 bls. from Sebenico and 1,225 Gothenburg; Price & Pierce, 1,025 bls. from Gothenburg; Chemical National Bank, 780 bls. from Oslo, 256 Hamburg and 750 Gothenburg; Irving Trust Co., 500 bls. from Oslo and 506 Hamburg; E. J. Keller Co., 112 bls. from Hamburg, 1,566 Bremen and 400 Oslo; Perkins-Goodwin Co., 1,284 bls. from Gothenburg; Farmers Loan & Trust Co., 800 bls. from Oslo; Castle & Overton, 1,665 bls. from Bremen; Order, 750 bls. from Oslo, 371 Hamburg, 5,499 Helsingfors and 112 Bremen.

Paper Stock

Imports of rags for papermaking into the United States in January amounted to $36,664,383 pounds, valued at $671,761, compared with 37,631,368 pounds of a declared value of $681,540 imported in the same month of 1928, according to official figures issued by the U. S. Department of Commerce. Imports of waste bagging and waste paper last January reached 12,505,554 pounds, against 7,936,436 pounds in the similar month a year ago, while imports of old rope and miscellaneous paper stock were 6,840,732 pounds in January, against 5,929,180 pounds last year.

Giving the Beaters a Lift

Conveyor or Gravity Feed Shredder

In the new mill of Taggart Bros. Co., Inc., Oswego, New York, one MITTS & MERRILL SHREDDER having a capacity of eight tons of dry stock per hour, shreds kraft pulp and discharges the stock by gravity into the chest where it is agitated until needed for the beaters.

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 364 and 365 in the 1928 Paper and Pulp Mill Catalogue

Starch—

A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

Imports of papermaking raw stock during March were fairly large, judging from receipts through the port of New York. Some sizeable shipments of rags arrived last month, and there were fair quantities of bagging and old rope received. Receipts of all grades of paper stock excepting wood pulp at the port of New York during March, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—E. J. Keller Co., 74 bls.; A. W. Fenton, Inc., 112 coils; Victor Galaup, Inc., 184 bls.; Anglo-South American Trust Co., 68 bls.; William Steck & Co., 12 bls. and 48 rolls; International Purchasing Co., 755 coils; Irving Trust Co., 10 cs. and 44 bls.; W. Schall & Co., 59 coils and 61 bls.; Bank of the Manhattan Co., 48 coils; Ellerman's Wilson Line, 141 coils; Brown Bros. & Co., 756 coils and 306 bls.; Order, 4 bls.

Old Bagging—Darmstadt, Scott & Courtney, 97 bls.; A. W. Fenton, Inc., 43 bls.; Overton & Co., 103 bls.; Banca Commerciale Italiana Trust Co., 85 bls.; Bank of the Manhattan Co., 134 bls.; Goldman, Sachs & Co., 65 bls.; National City Bank, 63 bls.; International By-Products Co., 42 bls.; Alfred Bloch & Co., 98 bls.; W. Schall & Co., 126 bls.; T. D. Downing & Co., 35 bls.; Katzenstein & Keene, 119 bls.; E. J. Keller Co., 289 bls.; Order, 11 bls.

Rags—Castle & Overton, 912 bls.; E. J. Keller Co., 1,329 bls.; Jebb Bros., 67 bls.; J. Cohen & Sons, 390 bls.; Atlas Waste Mfg. Co., 44 bls.; E. Butterworth & Co., 63 bls.; S. Birkenstein & Sons, 719 bls.; Katzenstein & Keene, 330 bls.; Darmstadt, Scott & Courtney, 158 bls.; J. Reiss Co., 42 bls.; I. Hinerfeld, 6 bls.; Schapiro Bros. & Co., 14 bls.; Daniel M. Hicks, Inc., 44 bls.; I. Horowitz, 23 bls.; Jaffe Products Co., 58 bls.; N. S. Maloof, 15 bls.; Alexander H. Searle, Inc., 121 bls.; Charles Belsky & Co., 28 bls.; Salomon Bros. & Co., 71 bls.; Victor Galaup, Inc., 654 bls.; Fritz Stern, 183 bls.; I. H. Brand, 409 bls.; Ernst Mayer, 10 bls.; H. Burrows, 3 bls.; International By-Products Co., 208 bls.; W. Schall & Co., 71 bls.; Merchants National Bank, 116 bls.; French-American Banking Corp., 306 bls.; C. R. Spence & Co., 252 bls.; Bank of America, 3 bls.; Equitable Trust Co., 103 bls.; Manufacturers Trust Co., 92 bls.; Banca Commerciale Italiana Trust Co., 168 bls.; Irving Trust Co., 139 bls.; National City Bank, 202 bls.; Chase National Bank, 363 bls.; Interstate Trust Co., 184 bls.; National Bank of Commerce, 75 bls.; Standard Bank of South Africa, 73 bls.; Chemical National Bank, 296 bls.; Tradesmen's National Bank, 31 bls.; Bank of the Manhattan Co., 271 bls.; Union Bank & Trust Co., 336 bls.; Public National Bank, 14 bls.; Flintkote Co., 65 bls.; Guaranty Trust Co., 132 bls.; A. W. Fenton, Inc., 492 bls.; R. F. Downing & Co., 219 bls.; Goldman, Sachs & Co., 120 bls.; Brown Bros. & Co., 476 bls.; Overton & Co., 75 bls.; Leigh Textile Co., 122 bls.; Van Oppen & Co., 85 bls.; Amsinck, Sonne & Co., 35 bls.; Campbell, Ward & Co., 26 bls.; American Express Co., 57 bls.; Amtorg Trading Co., 11 bls.; Porto Rican Express Co., 64 bls.; T. D. Downing & Co., 16 bls.; Atlantic Transport Co., 51 bls.; Order, 2,206 bls.

Miscellaneous Paper Stock—Whaling Waste Products Co., 275 bls.; Castle & Overton, 618 bls.; E. J. Keller Co., 76 bls.; E. Butterworth & Co., 145 bls.; Garfield National Bank, 81 bls.; Equitable Trust Co., 15 bls.; Bank of the Manhattan Co., 240 bls.; National City Bank, 4 bls.; State Street Trust Co., 105 bls.; Irving Trust Co., 40 bls.; Barrett Co., 104 bls.; T. D. Downing & Co., 62 bls.; Milton Snedeker Corp., 154 bls.; Amtorg Trading Co., 3 bls.; W. Schall & Co., 106 bls.; American Express Co., 57 bls.; Overton & Co., 36 bls.; Amsinck, Sonne & Co., 71 bls.; Order, 489 bls.

Paper

Importations of paper into the United States during January, 1929, showed a decline in point of value as compared with the preceding month, but a gain over the receipts in the corresponding month last year. Imports last January totaled in value $13,611,138, against $14,459,838 in the preceding month, and $13,017,337 in January, 1928, according to U. S. Department of Commerce statistics.

Paper imports in March were fairly large, if receipts through the port of New York can be taken as an indication. Arrivals of all kinds of paper at that port last month, these data being taken from manifests of steamers reaching New York during the month, were as follows:

Printing—Hudson Trading Co., 770 rolls from Gothenburg; New Haven Times-Union, 94 reels from Gothenburg; E. Dietzgen & Co., 101 cs. from Rotterdam, 112 cs. Hamburg and 41 cs. Bremen; Gallagher & Ascher, 31 cs. from Bremen and 2 cs. London; Guaranty Trust Co., 113 cs. from Hamburg; Neypaco Paper Co., 16 cs. from Havre; B. F. Drakenfeld & Co., 108 cs. from Liverpool; C. Steiner, 67 cs. from Rotterdam; H. Reeve Angel & Co., 443 reels from Helsingfors; J. J. Bernitz, 18 bls. from Hamburg; Perkins-Goodwin Co., 890 reels from Hamburg; Stora Kopparberg Corp., 124 reels from Gothenburg; F. Henjes, Jr., 66 reels from Hamburg; Keuffel & Esser Co., 217 rolls from Hamburg; P. C. Zuhlke, 91 cs. from Bremen and 104 cs. Antwerp; Hoboken Trust Co., 4 cs. from Bremen; Martin & Bechtold, 12 cs. from Bremen; P. Puttmann, 10 cs. from Antwerp; C. Bruning, 23 cs. from Havre; Order, 130 bls. from Hamburg and 597 reels and 18 bls. Bremen.

Wrapping—Standard Products Corp., 15 rolls and 2 cs. from Antwerp; G. Hirsch & Son, 2 cs. from Southampton; C. K. MacAlpine & Co., 150 bls. from Gothenburg; A. Johnson & Co., 3 reels from Gothenburg; Wilkinson Bros. & Co., 99 rolls and 23 bls. from Gothenburg; H. Reeve Angel & Co., 68 bls. and 101 rolls from Gothenburg; Bernard Ullmann Co., 19 bls. and 38 reels from Gothenburg; Arkell Safety Bag Co., 275 reels from Gothenburg; Steiner Paper Corp., 69 bls. from Oslo and 8 cs. Hamburg; F. C. Strype, 2 cs. from Antwerp; Birn & Wachenheim 122 cs. from Antwerp ; Walker Goulard Plehn Co., 30 bls. from Ham-

Acid Water troublesome in your mill?

Like many good things, the advantages of Quartz Quality Silicates come in 3's.

First of all you use Quartz Quality Silicate in the beater to make a better sheet of paper.

Secondly, if the white water in your mill is excessively acid, you should know how Quartz Quality Silicate is helping many mills overcome this condition. "No mystery, just chemistry."

Likewise the regular use of Quartz Quality Silicate in the beater softens the water and keeps the pipe lines clean.

Ask for further information about water treatment with Quartz Quality Silicates. We'll be glad to send you tickets of admission to the Chemical Exposition, May 6-11. Our Booths are Nos. 319 and 320.

Philadelphia Quartz Company

General Offices: Philadelphia

Chicago Office: 205 W. Wacker Dr.

PQ

Quartz Quality Silicates

National Croceine Scarlet FP Conc.

ESPECIALLY recommended for dyeing chemical pulps in the beater.—Possesses excellent fastness to light.—Does not foam, and leaves a nearly colorless "white-water".

National Aniline & Chemical Co., Inc.

40 Rector Street, New York, N. Y.

BOSTON PROVIDENCE CHICAGO CHARLOTTE TORONTO PHILADELPHIA SAN FRANCISCO

NATIONAL DYES

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

99 CHAUNCY ST. BOSTON, MASS.

Sole Selling Agents

Brandon "TRI-UMPH" 3-Ply Dryer Felts

Up to 245" in Width

CAREFUL, INTELLIGENT, QUICK SERVICE

"Tannite" Deckle Straps—

An Improved, Precision-Made Article

They Lie Flat—And Run Straight

Even At High Speed

Mfg. By

STOWE & WOODWARD COMPANY

Newton Upper Falls, Mass.

YES he's knocked out by falling pulp !!

National Safety Council
168 East Ohio Street,
Chicago, Illinois.

Please send me without obligation, information on how I can reduce accidents in my organization.

Company .....

Street .....

State .....

Your Name .....

You, too, can reduce *Your* ACCIDENTS

OVER 4,300 American companies have reduced their accidents even as much as 90 percent through the services of the National Safety Council—the only non-profit national accident prevention organization for industry. This accident prevention service, developed by foremost safety engineers, is complete. It has saved Council members millions of dollars. At a low price, you too can get the assistance in Safety work that your company needs.

You, as a member of the National Safety Council, will receive each month a selection of forty two-color accident prevention posters—strikingly illustrated. This is a definitely planned program to educate your workmen in Safe Practices—to reduce your accident costs. A sample poster in miniature is shown at left.

The National Safety News, an eighty-page magazine, will be sent to you each month. You will find its articles practical—inspiring—of real service.

In addition, you will be privileged to call upon the Council's staff of trained Safety engineers, editors, and librarians for information and advice on your accident prevention problems. At your disposal is the Council Library—the most comprehensive collection of safety knowledge in existence.

Investigate the services of the National Safety Council—only partly covered in the foregoing paragraphs. Kimberly Clark, Long Bell Lumber Company, and hundreds of other small and large companies use it profitably. Why not you? Return the coupon for full information.

burg; J. H. Schroeder Banking Corp., 33 cs. from Hamburg; Ellerman's Wilson Line, 50 bls. from Antwerp; R. F. Downing & Co., 50 bls. from Antwerp; Irving Trust Co., 31 bls. from Trieste; J. P. Heffernan Paper Co., 205 bls. from Antwerp; Order, 22 bls. from Gothenburg.

Cigarette—British-American Tobacco Co., 100 cs. from Southampton; P. J. Schweitzer, Inc., 237 cs. from Marseilles and 64 cs. Havre; Standard Products Corp., 394 cs. from Havre; American Tobacco Co., 600 cs. from Bordeaux; DeManduit Paper Corp., 608 cs. from St. Nazaire; Mallory Steamship Co., 2 cs. from Barcelona; Order, 41 cs. from Bordeaux.

Writing—G. W. Sheldon & Co., 2 cs. from Southampton; Guibont Freres & Co., 5 cs. from Southampton and 3 cs. Havre; American Express Co., 75 cs. from Marseilles and 10 cs. Havre; Distinctive Writing Paper Co., 27 cs. from Havre; Globe Shipping Co., 2 cs. from Southampton; W. J. Byrnes & Co., 3 cs. from Havre.

Filter—A. Giese & Son, 32 bls. from Southampton and 10 bls. Hamburg; International Mercantile Marine Co., 2 bls. from Southampton; E. Fougera & Co., 60 cs. from Bordeaux and 64 pkgs. Southampton; J. Manheimer, 154 bls. from Southampton; H. Reeve Angel & Co., 49 cs. from London and 194 bls. Southampton.

Drawing—H. Reeve Angel & Co., 5 cs. from London; G. Haas, 8 cs. from London; Keuffel & Esser Co., 100 cs. from Hamburg; International Forwarding Co., 40 cs. from Antwerp.

Tissue—F. B. Vandegrift & Co., 48 cs. from Liverpool; F. C. Strype, 30 cs. from Helsingfors; Schenkers, Inc., 109 cs. from Hamburg; J. B. Mast & Co., 12 cs. from Genoa; Baldwin Universal Co., 5 cs. from Liverpool.

Hanging—A. C. Dodman, Jr., Inc., 29 cs. from Liverpool and 8 bls. Southampton; F. J. Emmerich & Co., 58 bls. from Hamburg, 11 cs. Havre and 50 bls. Liverpool; C. A. Haynes & Co., 18 bls. from Liverpool and 202 bls. London; F. A. Binder, 11 bls. from Bremen; Globe Shipping Co., 51 bls. from Hamburg and 11 bls. Bremen; J. E. Bernard & Co., 50 cs. from Antwerp and 4 cs. Bremen; Irving Trust Co., 108 cs. from Hamburg; R. F. Downing & Co., 31 pkgs. from London; W. H. S. Lloyd & Co., 4 bls. from London; American Merchant Lines, 2 cs. from London.

Photo—J. H. Schroeder Banking Corp., 262 cs. from Bremen; Globe Shipping Co., 88 cs. from Bremen; Gevaert Co. of America, 536 cs. from Antwerp; Medo Photo Supply Co., 5 cs. from London; J. J. Gavin & Co., 10 cs. from Liverpool; P. C. Zuhlke, 84 cs. from Bremen and 107 cs. Antwerp; Order, 32 cs. from Bremen.

Board—Cheramy, Inc., 2 cs. from Southampton; Houbigant, Inc., 23 cs. from Southampton; J. A. Raber, 43 bls. from Gothenburg; Diamond Match Co., 20 reels from London; Guaranty Trust Co., 31 reels from Rotterdam; Cotv, Inc., 114 cs. from Havre; American Express Co., 21 cs. from Hamburg; Chatham & Phenix National Bank, 66 bls. from Gothenburg; H. H. Ayer, Inc., 4 cs. from Havre; Order, 93 cs. from Hamburg.

Miscellaneous—Whiting-Patterson Co., 39 cs. from Southampton and 4 cs. Bremen; J. E. Bernard & Co., 23 cs. from Gothenburg and 2 cs. Southampton; Japan Paper Co., 5 cs. from Rotterdam, 42 cs. Havre and 6 cs. Gothenburg; Kupfer Bros. Co., 9 cs. from Bremen; Universal Carloading & Distributing Co., 19 cs. from Bremen; S. Gilbert, 98 cs. from Bremen; F. L. Kraemer & Co., 19 cs. from Bremen and 6 cs. London; C. Steiner, 3 cs. from Rotterdam; Quality Art Novelty Co., 2 cs. from Havre and 7 cs. Hamburg; Keller-Dorian Paper Co., 131 cs. from Havre; Tice & Lynch, 2 cs. from Havre; Marcus Ward, Inc., 15 cs. from Bremen; J. J. Shore & Co., 16 cs. from Bremen; F. Murray Hill, Inc., 24 cs. from Bremen and 5 cs. Bordeaux; American Express Co., 101 cs. from Hamburg and 6 cs. Havre; Hudson Forwarding & Shipping Co., 2 cs. from Havre; Globe Shipping Co., 14 cs. from Havre and 39 cs. Rotterdam; R. F. Downing & Co., 27 cs. from Havre; Sussfield, Lorsch & Schimmel, 23 cs. from Havre; Canson & Montgolfer, 2 cs. from Havre; Public National Bank, 12 cs. from Marseilles; Heemsoth & Basse, 78 bls. from Rotterdam; Graham Paper Co., 10 bls. from Ponce; Irving Trust Co., 19 cs. from Havre; Coenca-Morrison Co., 12 cs. from Havre; G. W. Sheldon & Co., 9 cs. from London; Charles W. Williams & Co., 12 cs. from Antwerp; Borden & Riley Paper Co., 10 cs. from Antwerp; W. Birsch, 3 cs. from Antwerp; J. J. Murphy Paper Co., 2 cs. from Hamburg; P. H. Petry & Co., 7 cs. from Hamburg and 9 cs. Rotterdam; Bernard, Meiners & Co., 20 cs. from Canton; H. Reeve Angel Co., 9 cs. from Yokohama; Souvenir Importing Co., 19 cs. from Marseilles; Dingelstedt & Co., 7 cs. from Hamburg; Phoenix Shipping Co., 33 cs. from Hamburg; Hansel, Bruckman & Lorbacher, 17 cs. from Bremen and 2 cs. Havre; International Forwarding Co., 8 cs. from Bremen; J. Beckhardt & Co., 16 cs. from Rotterdam; D. C. Andrews & Co., 6 cs. from Bremen and 11 cs. Havre; C. R. Spence & Co., 8 cs. from Havre; Tamm & Co., 7 cs. from Bremen; Titan Shipping Co., 9 cs. from Havre; John Wanamaker, 3 cs. from Havre; Favor, Ruhl & Co., 9 cs. from Genoa.

Major O. M. Porter, executive secretary of the American Paper and Pulp Association, has been re-elected a director of the Swedish Chamber of Commerce of the United States of America, to serve for a term of three years. This election is not only a tribute to Mr. Porter's position in the industry, but also an indication of the useful contacts which have been established through the Chamber for pulp and paper manufacturers who have visited in the United States and the Scandinavian countries.

Franz Krawany

Franz Krawany, of Vienna, who was widely known among papermakers throughout the world as a statistician, died recently at the age of seventy-seven. Mr. Krawany was connected with the paper industry all his life, beginning as a young man in the office of the Neusiedler A. G. für Pap-

ALLIGATOR
TRADE MARK REG. U.S. PAT. OFFICE
STEEL BELT LACING
JUST A HAMMER TO APPLY IT
GENUINE Alligator Steel Belt Lacing is the strongest flexible joint ever developed. The entire belt end is clinched in the Alligator vise-like grip of steel. Protects belt ends also. Smooth on both sides of the belt. Patented sectional steel rocker hinge pin outlasts any other type of pin. Made in 11 sizes. Long, efficient service in every type of belting. Standardize on it. Sold at wholesale and retail the world over.
FLEXIBLE STEEL LACING CO.
4675 Lexington Street
Chicago, U.S.A.
In England at 195 Finsbury Pavement, London, E. C. 2
Look for the Alligator on the box and stamped on the lacing. Trade-Mark Reg. throughout the world.
Accept No Substitutes

PUMPS

THAT KEEP PRODUCTION UP
AND UPKEEP DOWN

LAWRENCE "VORTEX" is the answer

LAWRENCE "VORTEX" PUMPS are giving day-in ——day-out performance in numerous pulp and paper mills, handling all types of liquids and thick stock. The outstanding features are:—DURABILITY — ACCESSIBILITY — RELIABILITY.

These are the vital factors that eliminate pump troubles.

There is a LAWRENCE "VORTEX" pump for every service in the paper industry. It will pay you to investigate and standardize on the "VORTEX".

Write for recommendations and bulletins.

Lawrence Pump & Engine Co.

P. O. BOX 70,
LAWRENCE, MASS.
New York Office:—90 West Street

BUILT FOR HARD WORK, LONG LIFE, AND NO WORRY TO THE OWNER

ZAREMBA
EVAPORATORS

HAVE ESTABLISHED AN ENVIABLE REPUTATION

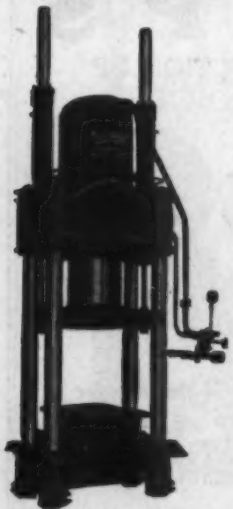
IN THE CONCENTRATION OF

SODA BLACK LIQUOR SULPHATE BLACK LIQUOR
SULPHITE WASTE LIQUOR

DUE TO
WIDE EXPERIENCE—THOROUGH ENGINEERING—PAINSTAKING CONSTRUCTION

ZAREMBA COMPANY
506 Crosby Bldg., Buffalo, N. Y.

New York City Office: 95 Liberty St.



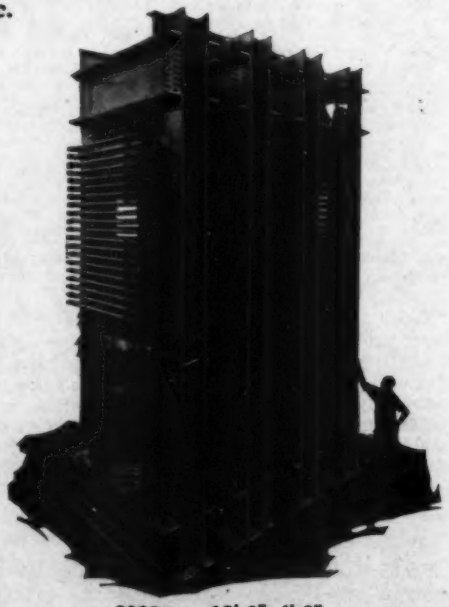
600 Ton Pulp Press

SOUTHWARK

Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.

PULP PRESSES
BALING PRESSES
WALL BOARD PRESSES
PULP TRUCKS
HYDRAULIC PUMPS
ACCUMULATORS
VALVES, FITTINGS, ETC.

Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



2000-ton 12'-6"x4'-6" 20 Opening Wall Board Press

SOUTHWARK
FOUNDRY and MACHINE CO.
400 WASHINGTON AVENUE
PHILADELPHIA, PA.

343 S. DEARBORN ST.
CHICAGO

AKRON
100 E. SOUTH ST.

ierfabrikation. He was at one time director of Smith & Maynier's mill at Fiume, and was head of the Paper Union reg. G.m.b.H. of Vienna from its foundation till it gave up business in 1911.

Mr. Krawany was also widely known as an author. His book on "International Paper Statistics" and another entitled "Paper Industries Handbook" were regarded as the most trustworthy publications of their kind.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 36798—Paper bags, for vacuum cleaners. Amsterdam, Netherlands. Purchase desired.

No. 36799—Paper milk bottles. Amsterdam, Netherlands. Purchase desired.

No. 36759—Paper towels, serviettes, drinking cups, and paper and wooden spoons. Buenos Aires, Argentina. Sole agency desired.

No. 36746—Wood fiber insulating boards. Dresden, Germany. Purchase and agency desired.

No. 36800—Writing paper and envelopes, medium grades, boxed and flat. Tampico, Mexico. Purchase desired.

No. 36773—Pulp and paper tearing and Mullen testers, and caliper measures for paper board. Helsingfors, Finland. Agency desired.

No. 36866—Paper bags, waterproof and strong. Cardiff, Wales. Purchase desired.

No. 36871—Newsprint paper. San Juan, Porto Rico. Agency desired.

No. 36904—Serving dishes and paper cups. Dunedin, New Zealand. Agency desired.

No. 36910—Paper Umbrellas. Leipzig, Germany. Purchase desired.

No. 36870—Wall board. Toronto, Canada. Agency desired.

No. 36909—Wrapping paper, and gummed paper tape. St. Gall, Switzerland. Purchase desired.

No. 36911—Writing, ledger and banknote paper, cardboard boxes, name cards, and old newspapers. Mukden, China. Purchase and agency desired.

No. 37055—Paper milk bottles, oiled or waxed. Montreal, Canada. Purchase or agency desired.

No. 37054—Carton board, and leather board. Copenhagen, Denmark. Purchase desired.

No. 37053—Wall board, composition. Oslo, Norway. Agency desired.

No. 37051—Writing paper and for business purposes. Mukden, China. Purchase or agency desired.

No. 37104—Sulphur, semi-manufactured and raw. Alexandria, Egypt. Agency or purchase desired.

No. 36938—Soda ash. Para, Brazil. Agency and purchase desired.

No. 36869—Box covers of lithographed paper. Winnipeg, Canada. Agency desired.

United States Civil Service Examinations

The United States Civil Service Commission announces the following open competitive examinations: assistant scientific aide, $1,620 a year; junior scientific aide, $1,440 a year; under laboratory apprentice, $1,260 a year; minor laboratory apprentice, $1,020 a year. Applications must be on file with the Civil Service Commission not later than May 7.

The examinations are to fill vacancies in the Departmental Service, Washington, D. C., including the Bureau of Standards, and in positions requiring similar qualifications.

Optional subjects for the position of assistant scientific aide are general physics, ceramics, chemical engineering, chemistry, civil and mechanical engineering, electrical engineering, paper technology, physical metallurgy, physics and chemistry, and textile technology. For the positions of junior scientific

YOUNGS
-TOWN
TANKS
Special Steel Plate Work for the Paper and Pulp Industries
We are capably equipped for special steel plate construction up to 2" thick for the paper and pulp industries, covering the following uses:
SODA AND SULPHITE DIGESTERS
HIGH PRESSURE TANKS
GLOBE AND CYLINDER COOKERS
RIVETED STEEL PIPE
LIME DRYERS
ELEVATED STEEL WATER TANKS
STORAGE TANKS (all capacities)
Our engineers will gladly submit plans and estimates.
Write for free copy of Bulletin 15
THE YOUNGSTOWN BOILER & TANK CO.
YOUNGSTOWN, OHIO
Offices in Principal Cities
Youngstown
TANKS

DRIVE RIGHT

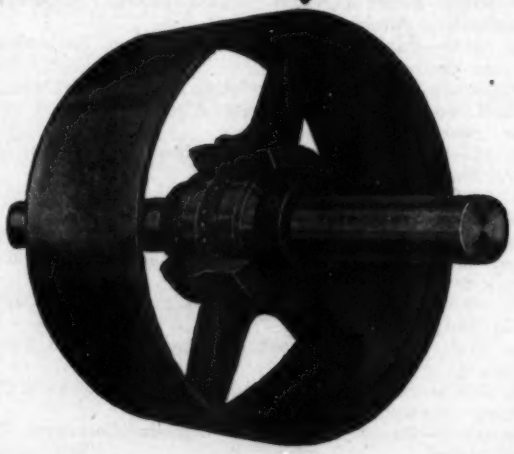
PROOF

AGAINST
LEAK
DUST
WEAR
TROUBLE

"Our loose pulley troubles have been entirely eliminated since we replaced our old ones with WOOD'S BALL BEARING LOOSE PULLEYS. They are easy to install—anyone can do it; do not wear out in bore, nor score the shaft; need lubrication only two or three times a year; grease can't leak out and dust can't get in; they're saving us money and worry every day." Would it mean anything to you to avoid any or all of these loose pulley troubles? Sure it would, and you can avoid them by using

WOOD'S BALL BEARING
LOOSE PULLEYS

BALL BEARING LOOSE PULLEYS



T. B. Wood Sons Co.

Chambersburg, Pa.

Makers of Shafting, Hangers, Collars, Pulleys, Friction Clutches, Ball Bearings, Flexible Couplings, Rope Sheaves, Pillow Blocks, "V" Belt Drives, and The U. G. Automatic Belt Contactor

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
CHAMPION
FIBRE CO.
Canton, N. C.

NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1928 Paper and Pulp Mill Catalogue

aide and under laboratory apprentice lists of eligibles will be established of those qualified in physics, those qualified in chemistry, and those qualified in both physics and chemistry. For the position of minor laboratory apprentice applicants must be examined in either physics or chemistry.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

Cabinet Officers Give First Views on Conservation

An adequate public program of forestry looking to the provision of future wood supplies, and a new and higher standard for national parks was the substance of the first statements concerning forest conservation and national park policies made by the Secretaries of Agriculture and Interior since accepting their cabinet portfolios.

In a signed statement made public today (March 29) to The American Forestry Association, Secretary of Agriculture, Arthur M. Hyde, expressed his belief that it was essential to the welfare of the nation to formulate an adequate forestry program looking to the provision of future wood supplies and other forest values.

"One of the large constructive tasks of the Department of Agriculture," he said, "is to advance the development of such a program. I shall use my best effort to continue the progress that has been made by the department under my predecessors in bringing about better care and use of our forest resources. The problems involved have many relationships with the whole problem of agricultural development and agricultural land use."

In his statement to the Association, Secretary of the Interior Ray Lyman Wilbur said: "Our great national park system is primarily of value to our country because of the preeminent inspirational and educational values inherent in varying degrees in the individual members. The standard for the creation of a national park is a high one and it must be maintained by the exclusion of scenic areas possessing merely local appeal and not having the essential element of national interest. The preservation of their natural wilderness state is vital, so that the national parks may continue to serve their great purpose in the education, health, and enjoyment of our people."

Light's Golden Jubilee

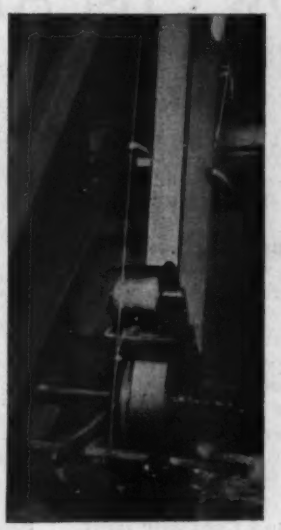
The civilized world has long waited for an opportunity to pay a fitting personal tribute to the master inventor for the greatest of all his gifts to mankind. October 21, 1929, will mark the fiftieth anniversary of Thomas A. Edison's invention of the first practical incandescent lamp, which offers fitting opportunity for a celebration which is to be called "Light's Golden Jubilee."

A sponsoring committee which is now being formed, will have at its disposal an adequate organization to plan, direct, and to co-ordinate the many events and activities of the jubilee. It is the general plan to start the first of a great series of events relatively early, with the thought of leading up to a tremendous climax on October 21st—the fiftieth birthday of the incandescent lamp. October 21st will be "The Night of Light" and will be the occasion of a celebration and tribute to Thomas Edison which will encircle the globe and echo through the years that follow.

Light's Golden Jubilee makes it timely to consider the tremendous progress that has been made in lighting during the past fifty years. It may be summarized in this way:

Light one room with a 100-watt Mazda lamp for 1000 hours. Light another room to the same degree of brightness with replicas of the first commercial incandescent lamp. Pay seven cents per kilowatt-hour for current. Now light a third room just as brightly with candles, and keep replacing the candles for 1000 hours. Here would be your light bill at the end of that time:

Room 1—100-watt Mazda lamp	$ 7.35
Room 2—Original incandescent	68.75
Room 3—Candles	1500.00



RHOADS TANNATE WATERSHED LEATHER BELTING

TANNATE WINS OVER A LINK BELT

THIS vertical belt with idler replaced a link belt in a midwest paper mill in 1924. An early report said, *"The Tannate cost less and works better."* Another report just received says, "It is still in use and continues to give satisfaction."

It was the second Tannate Watershed Belt in this plant. Now *they have dozens of them* and on nearly every kind of drive in the mill.

The unusual grip of Tannate Watershed dry or wet, its great strength and its durability under hard conditions particularly fit it for a wide range of paper mill drives.

The way many have been equipped with this excellent belting means more than good salesmanship.

It means that *they have found Tannate Watershed dependable and economical.*

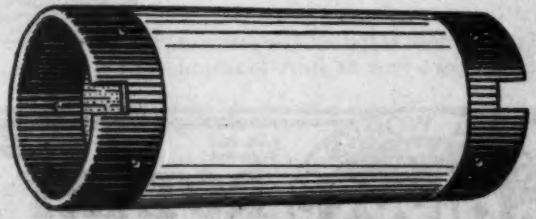
May we send you one or more Tannate Belts to help reduce your costs and increase your profits?

J. E. RHOADS & SONS

PHILADELPHIA.....47 N. Sixth St.
NEW YORK.....112 Beekman St.
CHICAGO.....34 N. Clinton St.
ATLANTA.....80 Forsyth St. S. W.
CLEVELAND.....1234 W. Ninth St.

Factory and Tannery, Wilmington, Del.

ELIXMAN PAPER CORE CO., INC.
Corinth, N. Y. U. S. A.



CANADIAN ELIXMAN CO., LTD.
Hamilton, Ont. Canada

When Low Cost Air Power Was Needed
to Pierce the Granite Backbone of the Cascades

Leaders of industry again chose Balanced Angle Compressors

Eighteen hundred men and a half-million in equipment, worked at once in America's longest railway tunnel.

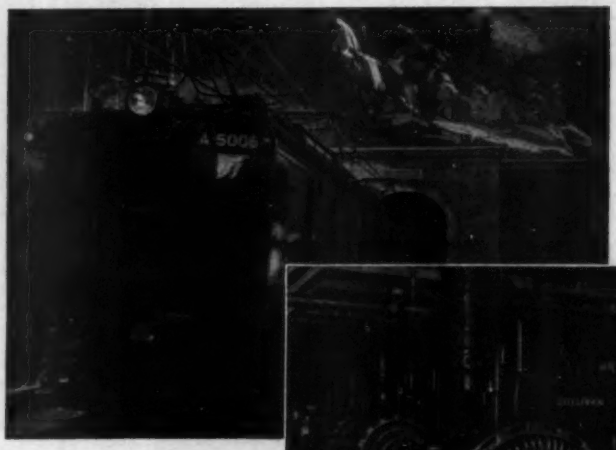
Like operations in your mills—drilling, blasting, and mucking were continuous. Three times world tunneling records were broken.

And vast effort—smoothly dovetailed—delivered the finished product to the Great Northern three days before schedule.

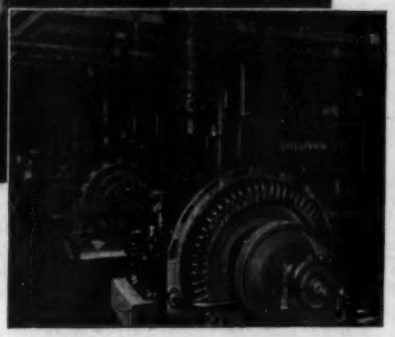
Men and machines for this enviable organization were chosen carefully. One cent saved per ton of rock removed, meant $30,000.00 on the 7.78-mile bore.

So—like leaders in your industry—the contractors, A. Guthrie and Company used Air Power by Balanced Angle Compressors.

Sullivan Compressor Capacities, 68 to 5100 cu. ft. Catalog 83-J.



The First Train at West Portal



At Right: Five of the Eleven Balanced Angle Compressors on the Job

BALANCED SULLIVAN ANGLE COMPOUND

SULLIVAN MACHINERY COMPANY
423 PEOPLES GAS BLDG., CHICAGO
After May 1st, 716 WRIGLEY BLDG.

SULLIVAN TRADE MARK

Take Corrugated Fiber Board for Just One Example

It isn't enough for an industry or one of its branches to grow rapidly—it must grow soundly and economically, too. The manufacture of corrugated paper is a fine illustration, in the paper industry, of the way the right equipment can facilitate quantity production at a continual saving.

Various plants of the Hinde & Dauch Paper Company for example have increased their installations of Biggs Rotary Bleaching units as demand for production has increased. The Company now operates more than 25 Biggs Rotaries and has expressed its satisfaction by saying—

"We have now installed ten rotaries at Sandusky; four at Fort Madison Mill No. 1; and twelve at Fort Madison Mill No. 2; all of which are of your manufacture and are giving excellent satisfaction.

"We would not hesitate to recommend your Rotaries to anyone requiring this class of equipment."

Biggs makes Penstocks, Stacks, Steel Pipe, Tanks and other steel vessels, riveted and welded, with the same care and accuracy. Your inquiries on any kind of heavy steel plate work are cordially invited.

The Biggs Boiler Works Co.
Akron, Ohio

Eastern Sales Office:
300 Madison Ave., New York City
Western Sales Office:
35 S. Dearborn St., Chicago, Ill.

The Biggs BOILER WORKS CO. AKRON OHIO

Trade Mark Registered

GLOBE and CYLINDER
ROTARY BLEACHING BOILERS
for Years of Dependable Cooking and Bleaching

670.5 V.11

THE PAPER INDUSTRY

Index to Volume Eleven

APRIL, 1929—MARCH, 1930

ASSOCIATIONS

American Paper and Pulp Association
- American Paper and Pulp Ass'n Holds Greatest Convention in Its History....Mar. 2169
- Annual Dinner of A. P. P. A. at Pennsylvania Hotel....Mar. 2174
- Chas. W. Boyce Elected Secretary of A. P. P. A....Mar. 2176
- Divisional Meetings....Mar. 2221
- Jesse H. Neal Named General Manager of American Paper and Pulp Association....Nov. 1409
- Program of 53rd Annual Convention of American Paper and Pulp Association....Feb. 1967
- Secretarial Changes in American Paper and Pulp Ass'n....July 649
- Woodlands Section Meeting....Mar. 2221

American Pulp and Paper Mill Superintendents Association
- Connecticut Valley Supers Meet....Dec. 1586e
- Connecticut Valley Supers Meet in Holyoke..May 313
- Connecticut Valley Supers Name Officers....Jan. 1803
- Interesting Meeting of Miami Valley Supers...May 329
- Miami Valley Supers Meet at Franklin....Nov. 1455
- Miami Valley Supers Meeting....June 533
- Miami Valley Superintendents Entertained....Oct. 1269
- Miami Supts. Hear Address on Felts....Mar. 2262
- Michigan Superintendents Elect Officers....Nov. 1453
- N. E. Division Supts. Discuss Timely Subjects..Oct. 1267
- Northern New York Supers Meet....May 265
- Northern New York Supers Meet....Nov. 1423
- Penna.-New Jersey Supers Meet....Apr. 80
- Program of Fall Meeting, Newsprint Service Bureau and Northwestern Division Superintendents Ass'n....Sept. 1013
- Southern Division Supers Meet....Nov. 1423
- Spring Meeting S. E. Division Supts....Apr. 83
- Superintendents Convention Program....May 270
- Superintendents Hold Dinner Meeting....Feb. 2009
- Superintendents Meet at Washington....Nov. 1400
- Superintendents Meet at Wausau....June 447
- Supers of Miami Valley Div. Meet....Apr. 105
- Turnbull Addresses Superintendents....Dec. 1601
- Wisconsin Supers Meet with Engineers....Oct. 1213

American Waxed Paper Association
- Waxed Paper Men Meet in New York....Jan. 1768

ASSOCIATIONS—(Continued)

Canadian Pulp and Paper Association
- Annual Meeting of Canadian Pulp and Paper Association....Feb. 1960
- Banquet Closes Canadian Convention....Feb. 1962
- Canadian Technical Section Has Fine Meeting.Feb. 1951
- Canadian Technical Section Meets....July 659
- Canadian Woodland Section Meets....Feb. 1963
- Newsprint Institute of Canada....Feb. 1964
- Program of the Seventeenth Annual Meeting of the Technical Section, Canadian Pulp & Paper Association....Jan. 1809

Cost Association of the Paper Industry
- Cost Association Elects New President....Dec. 1603
- Cost Association Meets....Oct. 1211
- Cost Association of the Paper Industry (Program)....Feb. 1969
- Cost Association of the Paper Industry (Semiannual Meeting)....Mar. 2215
- Interstate Cost and Technical Meeting....June 460
- Program of Interstate Meeting of the Cost Ass'n of Kalamazoo Valley and the Paper Technologists Club....May 264

National Paper Trade Association
- Paper Merchants Hold Annual Meeting....Mar. 2219

National Safety Council
- Eighteenth Annual Safety Congress....Oct. 1191
- Fox River Valley Safety Conference....June 44e
- Michigan Safety Congress....May 264
- Pacific Coast Safety Meeting....Mar. 2211
- Paper and Pulp Engineers Lead at Maine's Annual Safety Meeting....Feb. 1944
- Program of the Paper and Pulp Section of the 18th Annual Safety Congress of the National Safety Council....Sept. 1025
- Third All-Ohio Safety Congress....Feb. 1947
- Seventh Mid-West Safety Conference....Apr. 79

Newsprint Service Bureau
- Meeting of Newsprint Service Bureau....Feb. 1964
- Program of Fall Meeting Newsprint Service Bureau and NW Division Superintendents Ass'n....Sept. 1013
- Wisconsin Supers Meet with Engineers....Oct. 1213

INDEX TO VOLUME ELEVEN, THE PAPER INDUSTRY

ASSOCIATIONS—(Continued)

Paperboard Industries Association
- March Meeting Paperboard Industries.....Apr. 86
- Paperboard Industries Association.....June 469
- Paperboard Industries Association.....Oct. 1215

Salesmen's Association of the Paper Industry
- Meeting and Luncheon of Paper Salesmen....Mar. 2219
- Paper Salesmen Listen to Worth While Talks..Jan. 1767
- Position of North American Newsprint.....Apr. 87
- Salesmen Hear About Paper Testing.....June 535

Technical Association of the Pulp and Paper Industry
- Interstate Cost and Technical Meeting.....June 460
- Members of German Society Eligible to be Members of T.A.P.P.I.....Aug. 845
- Pacific Coast T.A.P.P.I. Convention.....Oct. 1224a
- Proceedings of the Annual T.A.P.P.I. Meeting in New York.....Mar. 2177
- T.A.P.P.I. Convention Committee Organizes....Aug. 843
- T.A.P.P.I. Fall Meeting Program.....Sept. 1012
- T.A.P.P.I. Holds Fall Convention at Richmond, Va., and Washington, D. C.....Oct. 1201
- Tentative Program of Annual Meeting of T.A.P.P.I. .....Feb. 1968

COSTS

Accountants Discuss Budgetary Control.....Apr. 86

An Accountant's Study of Marketing Costs.....Mar. 2209

Cost Accounting in the Paper Industry, D. A. Wilcox
- Part IV (2).....Apr. 73
- Part V.....May 245
- Part VI.....June 439
- Part VII.....July 640
- Part VIII.....Aug. 822
- Part IX.....Sept. 999
- Part X.....Oct. 1183
- Part XI.....Nov. 1380
- Part XII.....Dec. 1566
- Part XIII.....Jan. 1747
- Part XIV.....Feb. 1935
- Part XIV (2).....Mar. 2146

How the Purchasing Agent of a Paper Mill Functions, Waldo Hutchinson.....Sept. 991

Measuring and Reducing Labor Turnover, J. J. Berliner .....May 237

Time as a Cost Factor in the Paper Industry, Thomas J. Burke.....Aug. 838

EDITORIALS

An Appeal to the Industry.....Apr. 18

Application of the Hoover Conference Method....Dec. 1518

Business Is Improving.....May 198

Business Should Benefit from Stock Market Deflation .....Nov. 1323

Business "Slow-Down," The.....Mar. 2069

Competition from New Pulp and Paper Centers...June 394

Current Thought, William Sibley
- Dynamic Age, The.....Mar. 2153
- Foreign Competition and Domestic Taxes....Feb. 1939
- How Best to Inaugurate a Suggestion System..May 250
- Is the "Noble Experiment" Worth While?....Aug. 826
- Primary Purposes of Industrial Suggestion Systems .....Apr. 76
- Suggestion System Operation.....June 442

EDITORIALS—(Continued)
- Suggestion System Operation Difficulties—and How to Overcome Them.....July 643
- Teachings of Wall Street, The.....Dec. 1572
- This Matter of Efficiency.....Nov. 1393
- What's Ahead in Business for 1930.....Jan. 1763
- Who Causes the Buying?.....Sept. 1006
- Would an Airplane Pay?.....Oct. 1189

Deforestation Means Demoralization.....Dec. 1517

Forthcoming Census of Manufacturers, The.....Oct. 1128

Good Machine Tender, A.....June 394

Go to the Convention.....May 200

Growing Importance of our Kraft Paper Industry..July 596

Housecleaning Time for the Paper Industry.....Apr. 17

Lumber and Its Substitutes.....Mar. 2072

Make the Paper Industry Prosperous.....Aug. 765

Making Gains from Waste.....Aug. 766

Mental Attitudes Make Profits.....July 595

Merchandising Era.....Oct. 1125

Miracle of Light, The.....Nov. 1326

More Observations of a Traveler.....Nov. 1324

Neglect of the Art of Public Speaking.....Oct. 1128

"Not Understood".....Jan. 1688

Need of Standards of Machine Capacity.....Sept. 940

Outlook for Rayon Pulp, The.....Aug. 768

Overproduction Menaces Paper Investments.....May 197

Paper Industry Must Make Money, The.....Sept. 937

Pooling Knowledge.....Mar. 2070

"Price-Cutting" Will Ruin the Prosperity of the Country .....Feb. 1881

Progressing with a Great City.....Dec. 1515

Profitless Prosperity.....Apr. 20

Regional Shifts in the Paper Industry.....Mar. 2070

Regional Studies of Pulpwood.....Jan. 1686

Report on Paper Materials Testing.....June 396

Sad Case of Mr. Penny W. P. Foolish, The.....June 393

Scientific Control in the Paper Industry.....Feb. 1882

Sidelights on the Safety Congress.....Oct. 1126

Significant Figures of Pulpwood Consumption....July 596

Spend for More Business.....Feb. 1884

Standard Diameters for Paperboard Rolls.....July 598

Styles for Mill Workers.....Aug. 768

Thanksgiving .....Nov. 1326

They're Off—Watch this Train.....Feb. 1884

Work Will Win 1930.....Jan. 1685

Workers' Opportunities Under Scientific Research.Sept. 938

UNCLASSIFIED ARTICLES

Adventures in Technical Control, M. W. Hedden....Oct. 1182

Along the Border (Description Fraser Companies' Plant), Harry E. Weston.....Dec. 1574

Ambition Is Good, But—, Maurice C. Moore.....Mar. 2145

Can Technical Development Help the Paperboard Industry?, C. C. Heritage.....July 658

Economical Operation of Pulp and Paper Mills, Jos. H. Slater.....June 464f

INDEX TO VOLUME ELEVEN, THE PAPER INDUSTRY

UNCLASSIFIED ARTICLES—(Continued)

Experimental Paper Mill (Brown Co.).....June 459
Exposition of Chemicals Used in the Industries....May 259
Growth of Canada's Pulp and Paper Industry, The, J. B. M. Clark.....Aug. 836
"I Made It Myself," W. F. Schaphorst, M. E.....Apr. 75
Making Industry (I. P. Co., Mobile), Harry E. Weston .....Oct. 1219
Making Paper at Tuscaloosa.....Sept. 1019
Mechanical vs. Human Control, Irvin S. Thyle.....Feb. 1938
New Development in Roof Construction, A. B. Shenk .....Nov. 1406
New Mill of Great Lakes Paper Co.....Aug. 828
New Pacific Coast Paper Mill (Grays Harbor P. & P. Co.).....Nov. 1399
New Power Plant at Hamilton.....Sept. 1026f
New Power Plant at Waldorf Paper Prods. Co.....Nov. 1395
New Type of Motor, A, J. R. Hopkins.....June 483
Nova Scotia's First Newsprint Mill.....Jan. 1770
Origin of the Barking Drum.....July 739
Our Advancing South, Harry E. Weston.....Sept. 1014
Package Revolution, The, Waldon Fawcett.....Oct. 1179
Power and Mechanical Engineering Show.....Dec. 1586
Profits by Sorting and Cleaning (Consolidated Paper Co.).....Dec. 1584
Recipes for Paper and Pasteboard.....May 279
Reducing the Costs of Distribution, Robert F. Elder Aug. 809
Roof Construction for Paper Mills, N. S. Perkins, C. E.....Sept. 1003
Something About a Few Things, T. L. Dunbar....July 656
Southern Paper Mill Laboratory, A (Bogalusa Paper Co.).....Aug. 834
Starch in Papermaking, J. P. Strasser.....Mar. 2205
Timber Waste, Paper and Stockings, Fred Grove-Palmer, A. I. C.....Feb. 1932
West Virginia Pulp and Paper Co. Completes New Construction .....May 273
When Industry Comes (Southern Advance Bag & Paper Co.).....Sept. 1026
Wood Pulps of Today, N. L. Nourse.....June 471

FORESTRY

American Forestry Ass'n Announces Awards.....Nov. 1408
History Being Made in New York.....Oct. 1218
Present and Future Trends in the Pulping of Southern Woods, C. E. Curran.....Jan. 1739
West Virginia's First Commercial Forestry Conference .....Jan. 1789

INDUSTRIAL

Co-operation, James Jaynes.....Sept. 996
Costs, James Jaynes.....Jan. 1756
Cream of American Industrial Ideas, King Hamilton Grayson.....Apr. 85
Foreman Training an Aid to Industry, J. Norman Spawn .....Feb. 1929
Good Leadership, James Jaynes.....Aug. 813
Group Feeding as an Economy Factor, S. K. Hargis.June 435

INDUSTRIAL—(Continued)

International Situation in Paper, The, Part I, King Hamilton Grayson.....Dec. 1583
International Situation in Paper, The, Part II, King Hamilton Grayson.....Mar. 2143
Men and Management, M. W. Hedden.....Jan. 1761
Paper and Pulp in 1928.....July 650
Paper Industry in 1930, The.....Jan. 1765
Paper Outlook in New Zealand, The, King Hamilton Grayson.....June 464c
World's Paper Consumption, The.....July 650

MANUFACTURE OF PULP AND PAPER
(Chemical and Mechanical Processes)

Advantages of Sodium Bisulphite Over Calcium Bisulphite in Cooking Liquor, Abstracted from Articles by L. J. Dorenfeldt.....July 636
Beating, P. E. Hodgdon.....June 479
Beating and the Vertical Hydrator, P. E. Hodgdon.Mar. 2161
Bisulphite and Alkaline Soda Processes, James Beveridge .....Sept. 1008
Blow Line Diameters, Albert B. Gregg.....Feb. 1934
Control of Sizing Material Losses, E. Frank Whittington .....Apr. 68
An Early Bisulphite Cooking Process, James Beveridge .....Jan. 1795
How Long Is Your Wire?, Peter Smith.....Sept. 1002
New Era in the Manufacture of Paper, V. S. Denison .....Nov. 1405
Perfect Pulp and Paper Mill Control, E. C. Gildenzoff .....July 653
Printer's Paper Problems, The, Ronald I. Drake....July 651
Process of Sulphite Manufacture, The, Part V, Fred Motschman.....May 241
Pulp Mill Water Supplies, Kenneth Shibley.....Oct. 1224c
Rosin Sizing.....July 657
Scientific Control in a Groundwood Mill, Wm. H. Brydges.....July 655
Stock Loss Determinations, D. S. Davis.....July 647
Sulphate and Soda Recovery Methods, C. L. Wagner.Oct. 1211
Sulphate Process and Kraft Paper, The, Geo. Voght.June 467
Temperature of Bleaching vs. Strength of Fiber, Wilfred V. Torrey.....May 249
Tinting and Coloring of Newsprint, The.....Apr. 88

MANUFACTURE OF PULP AND PAPER
(Power Plant)

Angular and Vertical Belts, W. F. Schaphorst, M. E. .....May 240
Application of Electric Motors to the Pulp and Paper Industry, H. E. Stafford
Part I.....Nov. 1375
Part II.....Dec. 1570
Part III.....Jan. 1751
By-Product Power in Paper Industry, John Ferguson .....Nov. 1384
Centrifugal Pumps, Warren D. Spengler.....July 635
Checking Total Costs of Power Plants, Warren D. Spengler.....Sept. 1002

INDEX TO VOLUME ELEVEN, THE PAPER INDUSTRY

MANUFACTURE OF PULP AND PAPER—(Continued)

An Economical Power System, F. A. Westbrook....May 257

Engineering Pointers, W. F. Schaphorst, M. E.....Jan. 1745

Finding Leaks in Rock-Filled Dams, L. Rankin....Mar. 2150

High Pressure Steam Economies, G. H. Suhs.....Nov. 1389

High Spots in Problem of Burning Pulverized Coal, Walter N. Polakov.....Apr. 59

How to Solve Loose Pulley Oil Cup Problems.....June 438

Lubrication and High Temperature, W. F. Schaphorst, M. E.....Jan. 1744

Notes on Lubrication, Warren D. Spengler.....Aug. 815

Operating Fields of Steam Engines and Turbines Are Distinguished.....Feb. 1970d

Pointers on Power Transmission, W. F. Schaphorst, M. E.....June 437

Power Economy on Breaker Beater, Harry W. Motter .....Nov. 1407

Recent Boiler Practice in Germany.....May 254

Specialty Boxboard Mill, The, F. E. Caton.....Mar. 2151

Steam Consumption of Back Pressure Turbines, Warren D. Spengler.....Oct. 1181

Useful Pipe Union Kink, N. G. Near.....June 437

What Diameter? What Pressure? How Many Pounds of Steam?.....Dec. 1565

What Is the Belt Tension?.....June 438

PRACTICAL HELPS FOR THE MILL MAN

Practical Helps for the Mill Man

Apr. 97	May 283	June 493
July 683	Aug. 857	Sept. 1039
Oct. 1241	Nov. 1429	Dec. 1603
Jan. 1797	Feb. 1985	Mar. 2225

SAFETY

Achieving "Built-In" Safety, W. J. Brennan.....July 633

Contests of 1927 and 1929 Now Closed.....July 648

How the Riley Mill Won "The Paper Industry" Safety Cup.....Aug. 818

SAFETY—(Continued)

Human Slips Cause Most Plant Accidents.....Dec. 1582

Noon Hour Conversation, A, Marin Phillips.....Nov. 1387

Paper Industry 1927 Safety Contest, The

February Scores.....Apr. 78

March Scores.....May 253

April Scores.....June 445

May Scores.....July 648

Paper Industry 1929 Safety Contest, The

February Scores.....Apr. 78

March Scores.....May 253

April Scores.....June 445

May Scores.....July 648

Final Ranking of Mills in 1929 Contest.....Oct. 1194

Paper Industry 1930 Safety Contest, The

Rules for 1930 Safety Contest.....Jan. 1766

Contest Under Way in 123 Mills.....Feb. 1941

January Scores.....Mar. 2155

Safety, James Jaynes.....Oct. 1186

Safety as Seen Through the Eyes of the Insurance Company, J. A. Purdy.....May 265

TECHNICAL DEVELOPMENTS

Technical Developments in the Paper Industry

Apri. 145	May 341	June 543	July 713
Aug. 885	Sept. 1073	Oct. 1271	Nov. 1463
Dec. 1633	Jan. 1829	Feb. 2017	Mar. 2279

TESTING

Chemical Microscopy in Paper Mill Laboratory, Kenneth P. Geohegan.....Mar. 2199

Notes on Analytical Paper Microscopy, K. P. Geohegan .....June 473

WASTE

Cutting Out Fiber Losses, Aubrey T. Taylor.....Jan. 1779

Scientific Management.....Apr. 67

Treating Sulphite Pulp Waste.....June 464d

Alphabetical Index to Our Advertisers

When writing them, please mention The Paper Industry

Acme Steel Co.
Alexander Brothers, Inc. 146
Allis-Chalmers Mfg. Co.
American Engineering Co.
American Paper Mach. & Eng. Wks. 178
American Schaeffer & Budenburg Corp. 60
American Telephone & Telegraph Co. 64
Anderson & Co., J. 170
Appleton Machine Co.
Appleton Wire Works 144
Appleton Woolen Mills 54

Bagley & Sewall Co., Inc. 27
Bailey Meter Co. 148
Barker, E. R. 156
Bartlett Hayward Co., The 51
Bausch & Lomb Optical Co.
Beloit Iron Works 1
Biggs Boiler Works, The 135
Bird Machine Co. 104
Black-Clawson Co., The 41, 42
Borregaard Co., Inc., The 170
Boston Woven Hose & Rubber Co. 99, 100
Botfield Refractories Co. 56
Bristol Co., The
Brown Instrument Co., The 4
Buffalo Forge Co. 126
Buffalo Steam Pump Co. 126
Bulkley, Dunton & Co. 172
Butterworth Sons Co., H. W. Inside Back Cover

Cabble Excelsior Wire Mfg. Co., The Wm. 164
Cady & Co., E. J.
Cameron Machine Co. 120
Carey, James L. 150
Chemipulp Process, Inc. 154
Chisholm-Moore Hoist Corp. 19
Cincinnati Rubber Mfg. Co. 40
Cleveland Worm & Gear Co., The 43
Coe Mfg. Co., The 49
Combustion Engineering Corp. 5
Consolidated Ashcroft Hancock Co., Inc. 60
Continental Industrial Engrs. Inc. 150
Corn Products Refining Co. 179
Crane Co. 10, 11
Cutler-Hammer, Inc. 55

Dart Mfg. Co., E. M. 184
Davis Regulator Co., G. M. 151
Dayton Beater & Hoist Co. 172
Dayton Rubber Mfg. Co., The 35
DeLaval Steam Turbine Co. 63
Diamond Alkali Co. 162
Dilts Machine Works, Inc. 34
Dominion Eng. Works, Ltd.
Downingtown Mfg. Co. 22, 23
Draper Bros. Co. 164
du Pont de Nemours & Co., Inc., E. I. 33

Eastern Chain Works, Inc. 142
Eastwood Wire Corp. 133
Edgar Brothers Company
Edge Moor Iron Co. 142
Electric Machinery Mfg. Co. 59
Electro Bleaching Gas Co. 16
Erie City Iron Works 156

Falk Corp., The
Farrel-Birmingham Co., Inc. 146
Ferguson Engineers 150
Ferguson, Hardy S. 151
Fitchburg Duck Mills 182
Foreign Paper Mills, Inc. 152
Foster Wheeler Corp.
Foxboro Co., Inc., The 45

General Dyestuffs Corp. 165
General Electric Co. 61
General Refractories Co.
Georgia Power Co. 37
Gibbs-Brower Co. 148
Gilmer Co., L. H. 15
Glens Falls Machine Works 62
Goodrich Rubber Co., B. F. 28, 29
Goodyear Tire & Rubber Co., Inc., The
Graton & Knight Co. Back Cover

Hamblet Machine Co. 168
Hammermill Paper Co. 160
Hardy, George F. 150
Hardy & Sons, Wm. A. 184
Harris-Seybold-Potter Co. 124
Hauser-Stander Tank Co., The 172
Hayton Pump & Blower Co. 176
Heine Boiler Co. 5
Hermann Mfg. Co. 50
Holyoke Machine Co. 132
Holyoke Wire Cloth Co.
Hooker Electrochemical Co. 6
Horne & Sons Co., J. H. 32
Houghton & Co., E. F. 123
Hudson-Sharp Mach. Co. 168
Hungerford & Terry, Inc. 142
Huyck & Sons, F. C. 52
Hyatt Roller Bearing Co. 102

Int. Combustion Eng. Corp. 5

Jeffrey Mfg. Co., The 48
Jenssen Co., G. D. 166
Johnson & Wierk, Inc. 150
Jones Bros. Co. 182
Jones & Sons Co., E. D. 180
Jones Foundry & Machine Co., W. A. 39

Kalamazoo Tank & Silo Co. 166
Kalamazoo Vegetable Parchment Co. 168
Kalbfleisch Corporation, The 108
Knox Woolen Co. 172

Ladd Water Tube Boiler Co. 5
Langston Co., Samuel M. 21
Lawrence Mach. & Pump Co. 154
Lawrence Pump & Engine Co. 129
Layne & Bowler, Inc. 158
Lefren, Karl A. 150
Lewellen Mfg. Co. 149
Lindsay Wire Weaving Co., The 174
Link-Belt Co. 8, 9
Little, Inc., Arthur D. 150
Lobdell Car Wheel Co. 180
Locomotive Terminal Improvement Co. 110
Lunkenheimer Co., The 134

Manitowoc Engineering Works
Marion Malleable Iron Works 139
Maris Brothers, Inc. 150
Mathieson Alkali Works, Inc. 3
Medart Co., The 58
Merco Nordstrom Valve Co. Front Cover
Merritt Engr. & Sales Co., Inc. 176
Michigan Alkali Co. 175
Michigan Pipe Co. 184
Mid-West Machine Co., The 14
Minton Vacuum Dryer Corp.
Mitts & Merrill 177
Moore & White Co. 140
Morey Paper Mill Supply Co. 178
Morse Chain Co.
Mundt & Sons, Charles 184
Murray Mfg. Co., D. J. 158

Nash Engineering Co., The 156
National Aniline Chemical Co., Inc.
National Safety Council 192
Naylor Pipe Company 7
New England Tank & Tower Co.
Nitrose Co., The 36
Noble & Wood Mach. Co. 47
Norton Co. 118
Norwood Engineering Co. 136

Oakes Co., The Roland T. 176
Oakite Products, Inc. 179
Oliver United Filters Inc. 128
Orr Felt & Blanket Co. 145

Paper Converting Machine Co. 154
Paper Makers Chemical Co. 165
Penberthy Injector Co. 114
Pennsylvania Salt Mfg. Co. 165
Perkins & Son Co., Inc., B. F. 130
Perkins-Goodwin Co. 170
Permutit Co., The 57
Philadelphia Quartz Co. 173
Pickles, W. F. 142
Pittsburgh Piping & Equipment Co. 142
Powell Co., The Wm. 137
Price & Pierce 172
Pulp Bleaching Corp.
Pulp & Paper Trading Co. 170
Pusey & Jones Corp. 46

Reliance Electric & Engineering Co. 38
Rhoades & Sons, J. E. 151
Rice, Barton & Fales, Inc. 25
Roberts Mfg. Co., F. W. 166
Roeper Crane & Hoist Works, Inc. 178
Rollway Bearing Co. 148
Ross Engineering Corp., J. O. 116
Russ Company, E. F. 178
Ryerson & Sons, Joseph T. 129

Sandy Hills Iron & Brass Works 192
Schutte & Koerting Co.
Shartle Bros., Machine Co. 42, 41
Shuler & Benninghofen 26
Signode Steel Strapping Co. 139
Simonds Saw & Steel Co. 177
Simonds Worden White Co. 178
Simons, V. D. 150
Smidth & Co., F. L.
Smith Co., S. Morgan
Smith & Winchester Mfg. Co. 138
Solvay Sales Corp. 167
Southwark Foundry & Machine Co. 186
Springfield Boiler Co. 142
Standard Oil Co., (Indiana) 12
Stanley Works, The 125
Stearns Lumber Co., A. T. 131
Stebbins Eng. & Mfg. Co. 154
Stickle Steam Specialties Co.
Stowe & Woodward Co. 174
Sullivan Mach. Co. 127
Swenson Evaporator Co. 44

Taylor, H. S. 150
Taylor Instrument Co. 31
Terry Steam Turbine Co., The 13
Texas Co. 112
Texas Gulf Sulphur Co. 166
Textile-Finishing Machinery Co. Inside Front Cover
Thyle Machinery Co. 30
Timken Roller Bearing Co., The 106
Toledo Scale Co. 121
Tolhurst Machine Works, Inc. 53
Trimbey Machine Works 63
Tyler Company, The W. S. 147

Union Screen Plate Co. 184
Unit Heater & Cooler Co. 158
U. S. Dept. of Agriculture 148

Walmsley & Co., Ltd., Chas.
Warren Steam Pump Co., The 143
Waterbury Felt Co. 174
Westinghouse Elec. & Mfg. Co. 122
Whiting Corp. 44
Williams & Sons, I. B.
Wisconsin Wire Works 176
Wood's Sons Co., T. B. 141
Worthington Pump & Mach. Corp. 24

Zaremba Co. 186

The
Sandy Hill Iron & Brass Works

HUDSON FALLS
N. Y.

MANUFACTURERS
of

Paper & Pulp Mill Machinery

YES he's knocked out by falling pulp !!

National Safety Council
168 East Ohio Street,
Chicago, Illinois.

Please send me without obligation, information on how I can reduce accidents in my organization.

Company .....

Street .....

State .....

Your Name .....

You, too, can reduce *Your* ACCIDENTS

OVER 4,300 American companies have reduced their accidents even as much as 90 percent through the services of the National Safety Council—the only non-profit national accident prevention organization for industry. This accident prevention service, developed by foremost safety engineers, is complete. It has saved Council members millions of dollars. At a low price, you too can get the assistance in Safety work that your company needs.

You, as a member of the National Safety Council, will receive each month a selection of forty two-color accident prevention posters—strikingly illustrated. This is a definitely planned program to educate your workmen in Safe Practices—to reduce your accident costs. A sample poster in miniature is shown at left.

The National Safety News, an eighty-page magazine, will be sent to you each month. You will find its articles practical—inspiring—of real service.

In addition, you will be privileged to call upon the Council's staff of trained Safety engineers, editors, and librarians for information and advice on your accident prevention problems. At your disposal is the Council Library—the most comprehensive collection of safety knowledge in existence.

Investigate the services of the National Safety Council—only partly covered in the foregoing paragraphs. Kimberly Clark, Long Bell Lumber Company, and hundreds of other small and large companies use it profitably. Why not you? Return the coupon for full information.